

HUNTERS POINT SHIPYARD

San Francisco, California

July 2008

Semi-Annual Groundwater Monitoring Report

(October 2007 - March 2008)

Document Control No. CEKA-3001-0000-0008

Prepared by:



CE2 - Kleinfelder Joint Venture
4457 Willow Road, Suite 210
Pleasanton, CA 94588
Contract No. N62473-07-C-3001

Prepared for:



Department of the Navy
Base Realignment and Closure
Program Management Office West
1455 Frazee Road, Suite 900
San Diego, CA 92108



DEPARTMENT OF THE NAVY
BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE WEST
1455 FRAZEE RD, SUITE 800
SAN DIEGO, CA 92108-4310

5090
Ser BPMOW.hgk/0784
AUG 28 2008

Mr. Mark Ripperda (SFD 8-3)
U.S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Mr. Tom Lanphar
Department of Toxic Substances Control
700 Heinz Avenue, Bldg. F, Suite 200
Berkeley, CA 94710-2721

Mr. Erich Simon
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

Dear BCT Members:

Enclosure (1), *Semi-Annual Groundwater Monitoring Report, October 2007 – March 2008, Hunters Point Shipyard, San Francisco, California*, is provided for your information. This is the final semi-annual report to be submitted in accordance with the Final Sampling and Analysis Plan for Basewide Groundwater Monitoring Program, TtEMI 2004. Future reports will be submitted in accordance with the Draft Final Sampling and Analysis Plan for Basewide Groundwater Monitoring Program, CE2-Kleinfelder JV June 2008. The semi-annual reports will undergo a formatting change to reflect the new SAP, providing more relevance and focus on the areas of concern.

Should you have any concerns regarding the enclosed report, please contact Ms. Hamide Kayaci at (619) 532-0930.

Sincerely,

KEITH FORMAN
BRAC Environmental Coordinator
By direction of the Director

Enclosure: 1. *Semi-Annual Groundwater Monitoring Report, October 2007 - March 2008, Hunters Point Shipyard, San Francisco, California (July 2008)*

5090
Ser BPMOW.hgk/0784
AUG 28 2008

Copy to:

Ms. Karla Brasaemle (*hard copy & CD*)
TechLaw
90 New Montgomery Street, Suite 1010
San Francisco, CA 94105

Ms. Dorinda Shipman (*hard copy & CD*)
Treadwell and Rollo
555 Montgomery Street, Suite 1300
San Francisco, CA 94111

Mr. Michael A. Jacobvitz (*hard copy & CD*)
Mactec Engineering and Consulting, Inc.
5341 Old Redwood Highway, Suite 300
Petaluma, CA 94954

Mr. Steve Hall (*hard copy & CD*)
Tetra Tech, EM Inc.
1230 Columbia, Suite 1000
San Diego, CA 92101

Anna E. Waden Public Library (*hard copy*)
5075 Third Street
San Francisco, CA 94124

Mr. Patrick Shea (*hard copy*)
City of San Francisco Public Library
100 Larkin Street
Govt. Information Center, 5th Floor
San Francisco, CA 94102

Michael McGowan (*CD only*)
ARC Ecology
4634 3rd Street
San Francisco, CA 94124

Mr. Leon Muhammad (*hard copy*)
5048 Third Street
San Francisco, CA 94124

Mr. Mike Finch (*hard copy & CD*)
Cal/EPA
8800 Cal Center Drive
Sacramento, CA 95826-3200

Mr. Michael Sharpless (*CD only*)
Paul Hastings, et al.
55 2nd Street, 24th Floor
San Francisco, CA 94104-2635

Ms. Amy Brownell (*CD only*)
SF Department of Public Health
1390 Market Street, Suite 210
San Francisco, CA 94102

Ms. Andrea Ruiz-Esquide (*CD only*)
Office of the City Attorney
City Hall, Room 234
1 Dr. Carlton B. Goodlett Place
San Francisco, CA 94102-4682

Mr. Jeff Austin (*CD only*)
Lennar
49 Stevenson Street, Suite 525
San Francisco, CA 94105

Ms. Barbara Bushnell (*hard copy*)
6 Vistaview Court
San Francisco, CA 94124

Mr. Stan DeSouza (*CD only*)
SF Department of Public Works
1680 Mission Street, First Floor
San Francisco, CA 94103-2414

Ms. Diane Silva (*3 hard & CD, 1 full appendices*)
Records Manager (EVR.DS)
NAVFAC Southwest
1220 Pacific Highway, Bldg 128 Mail Room
San Diego, CA 92132

Semi-Annual Groundwater Monitoring Report

(October 2007-March 2008)

**Hunters Point Shipyard
San Francisco, California**

July 2008

**Document Control number: CEKA-3001-0000-0008
Contract N62473-07-C-3001**

Prepared for:



Department of the Navy
Base Realignment and Closure
Program Management Office West
1455 Frazee Road, Suite 900
San Diego, California 92108

Prepared by:



CE2-Kleinfelder Joint Venture
4457 Willow Road, Suite 210
Pleasanton, CA 94588

This page left blank intentionally

Certification

Semi-Annual Groundwater Monitoring Report (October 2007 – March 2008)

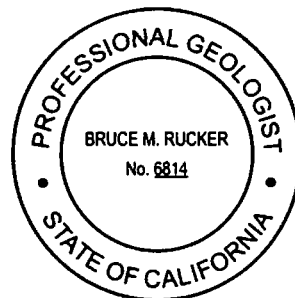
**Hunters Point Shipyard
San Francisco, California**

**Document Control number: CEKA-3001-0000-0008
Contract N62473-07-C-3001**

July 2008

I certify that the work presented in this report was performed under my supervision. To the best of my knowledge, the data contained herein are true and accurate and the work was performed in accordance with professional standards.

Bruce M. Rucker



**Bruce M. Rucker, PG
Senior Geologist
CE2-Kleinfelder Joint Venture**

This page left blank intentionally

Table of Contents

1.0	Introduction.....	1-1
1.1	Regulatory Framework	1-1
1.2	Scope.....	1-1
1.3	Changes to Basewide Compliance Monitoring Program.....	1-2
1.3.1	Well Installation and Decommissioning	1-2
1.3.2	Wells Added to Sampling Program	1-2
1.3.3	Wells Removed from Compliance Program	1-3
1.3.4	Changes to Sampling Frequency	1-4
1.3.5	Well Re-Surveying.....	1-4
1.3.6	Well Re-Development	1-4
2.0	Site Conditions and Background.....	2-1
2.1	Site Description and History	2-1
2.2	Contaminant Sources	2-1
2.3	Hydrogeology	2-2
2.3.1	Stratigraphy.....	2-2
2.3.2	Hydrostratigraphy	2-3
2.3.3	Recharge and Discharge	2-3
2.3.4	Groundwater Flow Direction	2-3
3.0	Groundwater Flow.....	3-1
3.1	Groundwater Elevation Data.....	3-1
3.1.1	4Q2007 Groundwater Elevation Data.....	3-1
3.1.2	1Q2008 Groundwater Elevation Data.....	3-1
3.2	Groundwater Flow	3-1
3.2.1	A-Aquifer.....	3-1
3.2.2	B-Aquifer	3-2
4.0	Nature and Extent of Groundwater Contamination	4-1
4.1	Groundwater Sampling and Analysis	4-1
4.2	Analytical Results	4-2
4.2.1	Parcel B.....	4-2
4.2.2	Parcel C.....	4-5
4.2.3	Parcel D.....	4-15
4.2.4	Parcel E	4-16
4.2.5	Parcel E-2.....	4-17
4.3	Quality Control Summary.....	4-17
4.4	Deviations from the SAP	4-18
4.4.1	4Q2007 Event	4-18
4.4.2	1Q2008 Event	4-19
5.0	Summary and Conclusions.....	5-1
6.0	References.....	6-1

List of Tables

Table 1-1	Monitoring well construction details.
Table 1-2	Monitoring well re-development evaluation.
Table 4-1.	Summary of groundwater sample information (October-December 2007).
Table 4-2.	Summary of groundwater sample information (January-March 2008).
Table 4-3.	Summary of quality control sample information (October-December 2007).
Table 4-4.	Summary of quality control sample information (January-March 2008).
Table 4-5.	Parcel B Trigger Level criteria for each RAMP monitoring well type.
Table 4-6.	Parcel B Trigger Level criteria for non-RAMP monitoring wells.
Table 4-7.	Numerical Parcel B Trigger Levels.
Table 4-8.	Exceedances of water quality criteria (4Q2007).
Table 4-9.	Exceedances of water quality criteria (1Q2008).
Table 4-10.	SAP Deviations for 4Q2007.
Table 4-11.	SAP Deviations for 1Q2008.
Table 4-12.	SAP deviation tracking for wells not sampled and not measured.

List of Figures

Figure 1-1.	Geographic setting.
Figure 4-1.	Time-series plot of trichloroethene concentrations in groundwater at selected IR-10 wells.
Figure 4-2.	Time-series plot of cis-1,2-dichloroethene concentrations in groundwater at selected IR-10 wells.
Figure 4-3.	Time-series plot of vinyl chloride concentrations in groundwater at selected IR-10 wells.
Figure 4-4.	Time-series plot of hexavalent chromium concentrations in groundwater at selected Parcel B wells.
Figure 4-5.	Time-series plot of mercury concentrations in groundwater at selected Parcel B wells.
Figure 4-6.	Time-series plots of TCE and cis-1,2-DCE in groundwater at RU-C1.
Figure 4-7.	Time-series plots of vinyl chloride, 1,2-DCB, and 1,4-DCB in groundwater at RU-C1.
Figure 4-8.	Time-series plots of TCE and cis-1,2-DCE in groundwater at RU-C2.
Figure 4-9.	Time-series plots of vinyl chloride, 1,2-DCB, and 1,4-DCB in groundwater at RU-C2.
Figure 4-10.	Time-series plots of TCE and cis-1,2-DCE in groundwater at RU-C4.
Figure 4-11.	Time-series plots of vinyl chloride, 1,2-DCB, and 1,4-DCB in groundwater at RU-C4.
Figure 4-12.	Time-series plots of TCE and cis-1,2-DCE in groundwater at RU-C5.
Figure 4-13.	Time-series plots of vinyl chloride, 1,2-DCB, and 1,4-DCB in groundwater at RU-C5.
Figure 4-14.	Time-series plots of total chromium and hexavalent chromium in groundwater at IR-09.

List of Plates

- Plate 1. Basewide monitoring wells.
- Plate 2. Basewide potentiometric surface contour map for the A-Aquifer (March 2008).
- Plate 3. Basewide potentiometric surface contour map for the B-Aquifer (March 2008).
- Plate 4. Lateral distribution of TCE, vinyl chloride, cis-1,2-DCE, and hexavalent chromium in groundwater.

List of Appendices (all Appendices provided on CD only)

- Appendix A. Groundwater elevation measurement forms.
- Appendix B. Groundwater elevation data.
- Appendix C. Monitoring well sampling forms.
- Appendix D. Chain-of-custody forms.
- Appendix E. Batch wastewater discharge permit application.
- Appendix F. Laboratory analytical reports and data validation reports.
- Appendix G. Analytical results.
- Appendix H. Field duplicate results.
- Appendix I. Quality control summary report.

Abbreviations and Acronyms

APPL	Agriculture & Priority Pollutants Laboratories, Inc
BGMP	Basewide Groundwater Monitoring Program
CCR	California Code of Regulations
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
DCB	Dichlorobenzene
DCE	Dichloroethene
DNAPL	Dense non-aqueous phase liquid
DTSC	(California) Department of Toxic Substances Control
EE	Exploratory Excavation
EPA	U.S. Environmental Protection Agency
HGAL	Hunters Point Groundwater Ambient Level
HPS	Hunters Point Shipyard
IR	Installation Restoration
JV	Joint Venture
LDC	Laboratory Data Consultants
LNAPL	Light non-aqueous phase liquid
µg/L	Microgram per liter (parts per billion)
MCL	Maximum Contaminant Level
MS/MSD	Matrix spike/matrix spike duplicate
MSL	Mean sea level
NAPL	Non-aqueous phase liquid
Navy	U.S. Department of the Navy
NAWQC	National Ambient Water Quality Criteria
NNP	Non Navy property
NOAA	National Oceanic and Atmospheric Administration
PARCC	precision, accuracy, representativeness, completeness, and comparability
PCB	Polychlorinated biphenyl
PCE	Tetrachloroethene
POC	Point of compliance
QA/QC	Quality assurance and quality control
QAPP	Quality Assurance Project Plan
RAMP	Remedial Action Monitoring Plan
ROD	Record of Decision
RPD	Relative percent difference
RU	Remedial Unit
RWQCB	(California) Regional Water Quality Control Board
SAP	Sampling and Analysis Plan
SVE	Soil vapor extraction
SVOC	Semi-volatile organic compound
TCE	Trichloroethene
TtEMI	Tetra Tech EM, Inc.
TPH	Total petroleum hydrocarbons
UST	Underground Storage Tank
VOC	Volatile organic compound
ZVI	Zero-valent iron

This page left blank intentionally.

1.0 Introduction

On behalf of the U.S. Department of the Navy, Naval Facilities Engineering Command, Southwest Division (Navy), the CE2-Kleinfelder Joint Venture (JV) has prepared this Semi-Annual Groundwater Monitoring Report for Hunters Point Shipyard (HPS) located in San Francisco, California. The location of HPS is shown on Figure 1-1.

This report documents data collected from October 2007 through March 2008 (Fourth Quarter 2007 [4Q2007] and First Quarter 2008 [1Q2008]). This report includes basewide data, including land Parcels B, C, D, E, E-2, and non-Navy property (NNP).

1.1 Regulatory Framework

Groundwater issues at HPS are primarily regulated by the United States Environmental Protection Agency (EPA), the California Regional Water Quality Control Board (RWQCB), and the California Department of Toxic Substances Control (DTSC). In 1989, the EPA placed HPS on the National Priorities List in response to shipyard activities that had resulted in soil and groundwater contamination.

A Record of Decision (ROD) for Parcel B is in place (Navy 1997). New criteria for evaluating Parcel B groundwater contamination are being proposed and will be included in an amended ROD.

A ROD has not been implemented for Parcels C, D, E, and E-2. The Basewide Groundwater Monitoring Program (BGMP) incorporated protocols specified under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA).

1.2 Scope

Basewide groundwater monitoring is conducted in accordance with:

- *Final Sampling and Analysis Plan (SAP) for the Basewide Groundwater Monitoring Program (BGMP)* (TtEMI 2004).
- *Final Addendum 1 to the Sampling and Analysis Plan* (CE2-Kleinfelder Joint Venture 2007a).
- *Final Addendum 2 to the Sampling and Analysis Plan* (CE2-Kleinfelder Joint Venture 2007b).

In Parcel B, groundwater monitoring is also conducted in accordance with:

- *Final Parcel B Remedial Action Monitoring Plan (RAMP)* (Tetra Tech EM, Inc. [TtEMI] 1999). Sampling under the RAMP began in September 1999.

The scope of the groundwater monitoring program includes:

- Measuring groundwater levels.
- Collecting and analyzing groundwater samples.
- Monitoring non-aqueous phase liquids (NAPL).
- Verifying and validating the analytical data.
- Interpreting the data.
- Submitting monitoring reports.
- Discharging wastewater generated from purging groundwater monitoring wells and decontaminating sampling equipment (all wastewater generated in the current reporting period was containerized in an onsite holding tank; that wastewater will be discharged under sanitary sewer permit in a subsequent reporting period).

Monitoring wells for which water level measurements and/or groundwater sampling are required to be performed by the SAP and/or RAMP are referred to in this report as compliance monitoring wells. Plate 1 shows the location of all HPS monitoring wells and indicates which wells are designated for water level measurement, sampling, or both measurement and sampling. Table 1-1 presents well construction details.

There are several wells discussed in this report that are not physically located within the base boundaries (designated as non-Navy Property [NNP] wells). These include:

- Wells located in former Parcel A (land formerly owned by the Navy and transferred to private ownership).
- Wells located just outside the Parcel B western property boundary of HPS.
- Wells located just outside the western and northern boundaries of Parcels E and E-2.

1.3 Changes to Basewide Compliance Monitoring Program

The following changes were made to the basewide compliance monitoring program in the current reporting period, per SAP Addendum no. 1 (CE2-Kleinfelder Joint Venture 2007a) and SAP Addendum no. 2 (CE2-Kleinfelder Joint Venture 2007b) unless specified otherwise. Tables 4-1 and 4-2 reflect the basewide compliance monitoring program for 4Q2007 and 1Q2008, respectively.

1.3.1 Well Installation and Decommissioning

No wells were installed or decommissioned in the current semi-annual reporting period.

1.3.2 Wells Added to Sampling Program

At the request of the regulators, a one-time sampling event (for cyanide only) was conducted in 1Q2008 in Parcel D in the following wells that are not currently in the sampling program.

- Well IR22MW07A
- Well IR22MW08A
- Well IR22MW15A
- Well IR22MW16A
- Well IR22MW20A
- Well IR22P15A1
- Well IR22P15A2

1.3.3 Wells Removed from Compliance Program

The following wells were removed from the compliance program because of physical condition, insufficient water, and/or were redundant for contouring water levels. Unless specified otherwise, both sampling and depth to water measurement requirements were removed.

- Well IR01MW17B (Parcel E) (deleted sampling requirement only, effective 1Q2008)
- Well IR01MW366A (Parcel E-2) (deleted sampling requirement only, effective 1Q2008)
- Well IR01MW367A (Parcel E-2) (effective 1Q2008)
- Well IR01MW58A (Parcel E-2) (effective 1Q2008)
- Well IR01MWI-6 (Parcel E-2) (deleted sampling requirement only, effective 1Q2008)
- Well IR01MWLF4A (Parcel E-2) (effective 1Q2008)
- Well IR02MW114A2 (Parcel E) (deleted depth to water measurement requirement only, effective 1Q2008)
- Well IR02MW183A (Parcel E) (deleted depth to water measurement requirement only, effective 1Q2008)
- Well IR02MW206A2 (Parcel E) (effective 1Q2008)
- Well IR02MWB-2 (Parcel E) (deleted sampling requirement only, effective 1Q2008)
- Well IR02MWB-5 (Parcel E) (deleted sampling requirement only, effective 1Q2008)
- Well IR02MWC5-W (Parcel E) (effective 1Q2008)
- Well IR10MW28A (Parcel B) (effective 1Q2008)

- Well IR11MW25A (Parcel E) (effective 1Q2008)
- Well IR11MW27A (Parcel E) (effective 2Q2007)
- Well IR12MW11A (Parcel E-2) (deleted depth to water measurement requirement only, effective 1Q2008)
- Well IR12MW17A (Parcel E) (effective 1Q2008)
- Well IR25MW60A1 (Parcel C) (deleted depth to water measurement requirement only, effective 1Q2008)
- Well IR28MW933F (Parcel C) (deleted depth to water measurement requirement only, effective 1Q2008)
- Well IR28MW934F (Parcel C) (deleted depth to water measurement requirement only, effective 1Q2008)
- Well IR36MW125A (Parcel E) (effective 1Q2008)
- Well IR36MW137A (Parcel E) (deleted depth to water measurement requirement only, effective 1Q2008)

1.3.4 Changes to Sampling Frequency

No changes to sampling frequency were made in the current semi-annual reporting period.

1.3.5 Well Re-Surveying

No wells were re-surveyed in the current semi-annual reporting period.

1.3.6 Well Re-Development

Thirty five (35) wells were re-developed in the current or previous reporting periods for one or more of the following reasons:

- Low recharge during well purging,
- Elevated turbidity or failure to stabilize during well purging,
- Accumulated sediment at the bottom of the well casing,
- Well was added to the sampling program and had not been purged in more than a year, and/or
- Dedicated pumps were installed in the well for the first time.

Table 1-2 summarizes the well re-development activities, including an evaluation of effectiveness and recommendations for further action. In summary:

Recommended No Further Action Regarding Re-Development

- Effective 3Q2008 (anticipated implementation date for revised monitoring program SAP), 15 of the wells are not anticipated to be included in the sampling program.
- Effective 3Q2008, five of the wells are anticipated to be sampled for only two semi-annual events then discontinued from the sampling program. Of those five wells, re-development was judged to be effective.
- Of the remaining 15 wells, redevelopment was judged to be effective in 12 wells.

Recommended Further Evaluation of Well Performance

- Of the remaining three wells, two exhibited low recharge both before and after re-development. The third well has exhibited inability to stabilize during purging, before and after re-development. Performance of these wells will continue to be evaluated, and additional corrective action may be warranted based on future evaluation.

This page left blank intentionally

2.0 Site Conditions and Background

This section presents a summary of the site setting, history, contaminant sources, and a conceptual summary of hydrogeologic conditions.

2.1 Site Description and History

HPS is located on the southeastern edge of San Francisco and along the western shore of San Francisco Bay. HPS currently covers approximately 420 acres of lowland coast and shoreline. HPS is divided into five terrestrial Parcels (B, C, D, E, and E-2) and submerged Parcel F. The locations of the terrestrial Parcels are shown on Figure 1-1.

HPS is bounded to the north, east, and south by San Francisco Bay. Off-site NNP is located to the west and south of Parcel B, to the west of Parcel C, to the north of Parcel D, and to the north and west of Parcels E and E-2.

Approximately 80 percent of the land area at HPS is composed of artificial fill, mostly quarried rock and dredged soil placed on top of marshland. Most of this filling occurred in the 1940s. The 1935 shoreline is shown on Plate 1.

From 1869 until 1939, the shipyard was operated as a commercial dry dock facility. The Navy leased the property prior to 1940, when the Navy obtained ownership of the shipyard for ship building, repair, and maintenance activities. At the conclusion of World War II, activities shifted from ship repair to submarine servicing and testing. HPS was deactivated in 1974 and remained relatively unused until 1976. Between 1976 and 1986, the Navy leased most of the property to a privately owned ship repair firm. In 1986, the Navy again occupied the shipyard and began a program to investigate and clean up contamination resulting from past activities.

The primary land use has been office and commercial/industrial buildings. Most of Parcels B, C and D are paved, while Parcels E and E-2 are mostly unpaved. Except along the boundary with the NNP, HPS is relatively flat with ground surface elevations averaging approximately 5 to 10 feet above mean sea level (MSL).

2.2 Contaminant Sources

Previous investigations at HPS have identified 78 Installation Restoration (IR) or Site Inspection (SI) sites at HPS, of which 66 are assigned to Parcels C, D, E, and E-2 as described in *Informal Briefing: Environmental Clean-Up Sites* (Navy 2003), and the remaining 12 are assigned to Parcel B as described in the RAMP.

Seven groundwater remedial units (RUs) have been defined at HPS. Four RUs (RU-C1, RU-C2, RU-C4, and RU-C5) are located in Parcel C. Two RUs (the Northwest Bay Fill Area, and the Former Oil Reclamation Ponds) are located in Parcel E. The final RU (Industrial Landfill Area) is approximately coincident with the boundaries of Parcel E-2. As discussed in Section 4.0, various pilot-scale treatability studies have been conducted in these areas, including soil vapor extraction (SVE), zero-valent iron (ZVI) injection, and sequential anaerobic-aerobic bioremediation.

The contaminants of concern for HPS groundwater include volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH), polychlorinated biphenyls (PCBs), pesticides, cyanide, and metals (primarily mercury and hexavalent chromium). Dense Non-Aqueous Phase Liquid (DNAPL) and/or Light Non-Aqueous Phase Liquid (LNAPL) have historically been present in a number of monitoring wells. The LNAPL typically consists of petroleum hydrocarbons such as fuel and waste oil; the DNAPL typically consisted of chlorinated solvents such as tetrachloroethene (PCE) and trichloroethene (TCE). DNAPL has not been detected in any HPS wells (as part of the BGMP) since 2002.

2.3 Hydrogeology

Conceptual summaries of the stratigraphy, hydrostratigraphy, recharge and discharge areas, and groundwater flow at HPS are presented in the following sections.

2.3.1 Stratigraphy

Five principal geologic units have been defined at HPS. In order of increasing depth, and approximately from youngest to oldest, these units are:

Artificial Fill (Qaf) – Most of the land area for HPS was created using quarried rock from upland areas. The artificial fill consists mostly of serpentinite with lesser amounts of dredged marshland deposits. The artificial fill also contains pockets of industrial fill consisting of building debris and sandblast grit. As a result, the artificial fill is a heterogeneous mixture of unconsolidated material with a wide range of grain sizes. The artificial fill overlies natural sediments or bedrock, depending on the location. The variable thickness of the artificial fill reflects erosional features such as stream channels in the natural sediments and an uneven bedrock surface. A relatively thin unit of slope debris and ravine fill underlies the artificial fill at scattered locations.

Undifferentiated Upper Sands (Quus) – This naturally occurring unit is comprised of poorly-graded, discontinuous estuarine, lagoonal, and alluvial sand deposits that overlie, but in places interbed with, the underlying Bay Mud. These sands may also directly overlie bedrock.

Bay Mud (Qbm) – The Bay Mud unit consists of estuarine sediments that are predominantly composed of silt and clay, but may include clayey or silty sands. The Bay Mud may underlie artificial fill or the upper sand deposits, and overlie the deeper undifferentiated sediments or bedrock. The Bay Mud is occasionally interbedded with the Undifferentiated Upper Sands unit.

Undifferentiated Sediments (Qu) – This unit consists of naturally occurring unconsolidated silty or clayey sands containing discontinuous, isolated sand lenses. These sediments can underlie any of the younger units.

Franciscan Complex Bedrock (Kf) – The bedrock consists primarily of serpentinite and minor amounts of metamorphosed basalt (greenstone) or shale. Bedrock competency is variable and fractures are common. Bedrock outcrops are present along the western

boundary of Parcel B. The bedrock surface is irregular across the HPS. For example, bedrock is shallow near the northern boundary of Parcels C, D, and E and along the north side of Dry Dock 3, but can be present at depths exceeding 130 feet in Parcel B and 280 feet in Parcel E.

2.3.2 Hydrostratigraphy

Four hydrostratigraphic units have been defined at HPS:

A-Aquifer - The unconfined A-Aquifer is present primarily in the artificial fill and Undifferentiated Upper Sands units, but in some places the groundwater in shallow fractured bedrock is in hydraulic connection with the A-Aquifer. In some locations the A-Aquifer has been subdivided into A-1, A-2, and A-3 zones to reflect localized water-bearing zones.

Bay Mud Aquitard - The discontinuous Bay Mud Aquitard separates the A-Aquifer from the B-Aquifer, where present.

B-Aquifer - The B-Aquifer is not continuous and directly underlies the A-Aquifer where the Bay Mud Aquitard is absent. The B-Aquifer is typically under semiconfined or confined conditions.

Bedrock Water-Bearing Zone - The Bedrock Water-bearing Zone consists of isolated pockets of fractured bedrock that are not hydraulically connected to upper hydrostratigraphic units.

2.3.3 Recharge and Discharge

Most groundwater recharge at HPS occurs by infiltration of precipitation falling on the off-site upland areas and by precipitation falling on unpaved areas onsite, especially in Parcels E and E-2. Recharge sources to the A-Aquifer can also include open trenches associated with the ongoing utility-removal projects in Parcels B and D.

Groundwater discharges from the A-Aquifer to San Francisco Bay at various below sea level segments along the shoreline, although specific areas of discharge have not been identified. Vertical gradients suggest that groundwater can flow either upward or downward between the A-Aquifer and the B-Aquifer, where the Bay Mud Aquitard between the two aquifers is absent.

2.3.4 Groundwater Flow Direction

Groundwater flow direction in the A-Aquifer is generally towards San Francisco Bay, but natural heterogeneities and anthropogenic features have created preferential groundwater pathways. The natural heterogeneities consist of stratigraphic discontinuities and facies changes. The anthropogenic features consist of heterogeneous pockets of artificial fill and an extensive system of buried utilities.

Groundwater elevations in the A-Aquifer are influenced by tidal fluctuations that create a sinusoidal pressure wave near the shoreline. Tidal influence in the A-Aquifer decreases with increasing distance from the shoreline. The tidal period is approximately 6 hours. At HPS, the

mean tide range (difference in height between mean high water and mean low water) averages approximately 5 ft throughout the year.

Local anomalies in groundwater elevation can be caused by the interaction of subsurface utilities (sanitary sewer, storm sewer, and water supply lines) with the regional groundwater regime. Storm/sanitary sewer lines and backfill in the utility trenches can serve as a preferential pathway for groundwater flow and can either discharge or receive water. Local anomalies in groundwater elevation have also been caused by groundwater injection/extraction activities associated with treatability studies.

Open trenches associated with the ongoing utility removal projects across Parcel B and the northern half of Parcel D may be influencing groundwater elevations where the trenches extend below the water table. To facilitate removal and radiological screening of buried utilities, the sanitary sewer system in Parcel B was deactivated in September 2005 and the storm sewer outfalls in Parcel B were sealed in 2006.

Except for trenching on the northwestern and northeastern sides of Building 134, utility-removal trenches have not been excavated in Parcel C. Likewise, trenching has not been conducted in the southern half of Parcel D, or in Parcels E and E-2.

The storm sewer outfalls in Parcel D were sealed in 2007. Prior to May 2007, an extensive system of sanitary sewer lines in Parcels D and E drained to a lift station near Building 819 from which the water was subsequently pumped offsite to the local sewage treatment plant. The lift station was deactivated in May 2007.

3.0 Groundwater Flow

This section discusses the collection of groundwater elevation data and the evaluation of groundwater flow for the current semi-annual monitoring period.

3.1 Groundwater Elevation Data

Groundwater measurements are typically planned to occur during a 4-hour period around the higher-low neap tide, to reduce tidal influence on the measurements. However, collecting groundwater level measurements within this time period is not possible if the higher-low neap tide occurs on a weekend, holiday, or at night. Tidal data for the current events were obtained from the National Oceanic and Atmospheric Administration [NOAA] (NOAA, 2007 and NOAA, 2008).

Groundwater elevations were calculated by subtracting the depth to water measurements from the respective top of casing elevations. Groundwater elevation measurement information and data are included in the following appendices:

Appendix A. Groundwater elevation measurement forms.

Appendix B. Basewide groundwater elevation data.

For the current semi-annual reporting period, depths to groundwater were measured in two quarterly events: October 19, 2007 (4Q2007) and March 13, 2008 (1Q2008).

3.1.1 4Q2007 Groundwater Elevation Data

Basewide groundwater elevations were measured in 350 monitoring wells in the 4Q2007 measurement event. For this event, groundwater depth measurements were made during the higher-low neap tide.

3.1.2 1Q2008 Groundwater Elevation Data

Basewide groundwater elevations were measured in 340 monitoring wells in the 1Q2008 measurement event. For this event, logistical issues necessitated measuring the water levels on the day preceding the neap tide. No useful daylight hours coincided with the higher-low tide. Therefore groundwater measurements were made during the lower-low tide on that day.

3.2 Groundwater Flow

3.2.1 A-Aquifer

Plate 2 presents the basewide potentiometric surface contour map for the A-Aquifer and was constructed using data from 1Q2008. In general, groundwater flows from NNP upland recharge areas towards San Francisco Bay. Consistent with previous quarters, groundwater flow directions and lateral gradients in the A-aquifer across HPS are similar between 4Q2007 and 1Q2008. For 4Q2007, which coincided with the beginning of the wet season, groundwater elevations across the shipyard ranged from approximately 8 ft MSL to 0 ft MSL. For 1Q2008,

groundwater elevations across the shipyard ranged from approximately 13 ft MSL to minus 2 ft MSL. Higher groundwater elevations are in response to recharge from precipitation.

In Parcel B, the A-aquifer potentiometric surface contours continue to roughly parallel the shoreline and sea wall. Relatively minor irregularities in the contours across the remainder of Parcel B may be attributable to ongoing trenching and removal of buried utilities. Slight groundwater mounding is evident on Point Avisadero east of the pumphouse tunnel.

In Parcel C, the A-aquifer potentiometric surface contours continue to approximately parallel the shoreline and dry docks. Groundwater mounds persist near Buildings 134 and 272.

The A-aquifer potentiometric surface continues to be relatively flat across much of Parcel D. A groundwater depression with elevations below sea level has historically been observed along the boundary between Parcels D and E. The depression is most likely the residual effect of groundwater draining into damaged sanitary sewer lines. Where the sanitary sewer lines were submerged below the water table, the lines served as conduits to drain the surrounding sediments and artificial fill. The sanitary sewer lines drained to a lift station where the water was subsequently pumped offsite to the local sewage treatment plant. The sanitary sewer lift station operated until May 2007. In 2Q2007, the lateral extent of the sanitary sewer line groundwater depression was approximately 73 acres. In 3Q2007, the depression had shrunk to approximately 16 acres, indicating that natural hydrogeological conditions were being reestablished. In 4Q2007 and 1Q2008, the lateral extent of the groundwater depression was approximately 6 and 5 acres, respectively. Relatively minor irregularities in the 1Q2008 contours across the northern half of Parcel D may be attributable to the ongoing trenching and removal of buried utilities.

In Parcel E, the A-aquifer groundwater ridge continues to parallel much of the western shoreline and extends from near Building 600 to the Industrial Landfill. The potentiometric surface across much of Parcel E is relatively flat.

Across the Panhandle Area of Parcel E-2, the A-aquifer potentiometric surface contours mimic the shoreline. Groundwater mounding persists at the Industrial Landfill.

3.2.2 B-Aquifer

Plate 3 presents a basewide potentiometric surface contour map for the B-aquifer and was constructed using data from 1Q2008. Orientation of the B-aquifer potentiometric surface contours across the shipyard are relatively consistent from quarter to quarter, but unlike the A-aquifer, mostly do not mimic the shoreline, sea wall, or dry docks.

Lateral gradients in the B-aquifer are relatively lower than in the A-aquifer and are generally similar for 4Q2007 and 1Q2008. From quarter to quarter, groundwater elevations in the B-Aquifer typically fluctuate within a narrow range. For 4Q2007, groundwater elevations in the B-Aquifer across the shipyard ranged from approximately 0 ft MSL to 7 ft MSL. For 1Q2008, groundwater elevations in the B-Aquifer across the shipyard ranged from approximately 0 ft MSL to 8 ft MSL.

4.0 Nature and Extent of Groundwater Contamination

4.1 Groundwater Sampling and Analysis

Two groundwater sampling events were conducted in the current semi-annual reporting period: from October 1 through October 19, 2007 (4Q2007), and from February 19 through March 12, 2008 (1Q2008). Groundwater samples were collected from monitoring wells in accordance with the BGMP SAP and RAMP, except as listed in Tables 4-10 and 4-11 (SAP deviations for 4Q2007 and 1Q2008, respectively).

Sampling, analysis and Trigger Level information for the current semi-annual reporting period is included in the following tables and appendices:

- Table 4-1. Analytes and frequency for groundwater samples (4Q2007).
- Table 4-2. Analytes and frequency for field QC samples (4Q2007).
- Table 4-3. Analytes and frequency for groundwater samples (1Q2008).
- Table 4-4. Analytes and frequency for field QC samples (1Q2008).
- Table 4-5. Parcel B Trigger Level criteria for each RAMP monitoring well type.
- Table 4-6. Parcel B Trigger Level criteria for non-RAMP monitoring wells.
- Table 4-7. Numerical Parcel B trigger levels.
- Appendix C. Monitoring well sampling forms.
- Appendix D. Chain-of-custody forms.

The Parcel B RAMP identified six types of monitoring wells:

1. Point of compliance (POC) wells located near the inland edge of the Tidally Influenced Zone.
2. Sentinel wells near the inland edge of the 5-year buffer zone.
3. Post-remedial action wells located within the Tidally Influenced Zone to monitor the effectiveness of source control measures.
4. VOC wells to monitor the potential degradation of TCE to vinyl chloride.
5. On-/off-site wells located near the western boundary of Parcel B.
6. Utility line wells.

Two other types of Parcel B monitoring wells have been established post-RAMP:

1. Hexavalent chromium wells.
2. Supplemental characterization wells that were installed in the vicinity of Exploratory Excavation (EE) -05 in January 2002 to evaluate the risk from groundwater on the eastern shoreline of IR-26 to aquatic receptors in the San Francisco Bay. Supplemental characterization wells were also installed in 2003 at IR-10 to monitor

the progress of the zero-valent iron (ZVI) injection treatability study.

Groundwater analyses (non-radionuclides) were performed by Agriculture & Priority Pollutants Laboratories, Inc. (APPL) in Fresno, California. Analyses for radionuclides were conducted by Eberline Services, Inc. in Richmond, California. Samples were transported to APPL from HPS by a courier. APPL then shipped samples for radionuclide analyses to Eberline Services, Inc.

4.2 Analytical Results

Plate 4 presents the lateral distribution of TCE, cis-1,2-dichloroethene (DCE), vinyl chloride, and hexavalent chromium in groundwater from the 1Q2008 sampling and analysis event. Data from all wells sampled for these analytes are shown on these figures, regardless of hydrostratigraphic completion interval. This provides a comprehensive depiction of the extent of contamination for these analytes.

A number of analytes were detected at concentrations exceeding the Federal or California Maximum Contaminant Levels (MCLs), Hunters Point Groundwater Ambient Levels (HGALs) or National Ambient Water Quality Criteria (NAWQC) (collectively referred to herein as "water quality criteria"). Values for HGALs and NAWQCs were obtained from the HPS Parcel B Remedial Action Monitoring Plan (RAMP) (TtEMI 1999). Values for MCLs were obtained from the USEPA and Cal/EPA websites. Tables 4-8 and 4-9 list the wells where water quality criteria were exceeded in the two sampling and analysis events comprising this semi-annual reporting period, and include the analytes exceeding water quality criteria and the respective analyte concentrations.

Analytical data for the current reporting period are presented in the following appendices:

Appendix F. Laboratory analytical reports and data validation reports.

Appendix G. Analytical results.

The following are parcel-specific discussions of contamination sources, previous treatability studies and corrective actions, and analytical results from the two events comprising the current semi-annual reporting period.

4.2.1 Parcel B

The Navy has conducted a series of excavations in Parcel B to remove soil contamination, as described in the *Draft Parcel B Technical Memorandum in Support of a Record of Decision Amendment* (SulTech 2006). Between July 1996 and January 1997, the Navy performed pre-ROD exploratory excavations at 18 sites across HPS, including removal of 1,700 cubic yards of soil from five sites within Parcel B. During two phases of remedial actions for soil in 1998-1999 and 2000-2001, 101,600 cubic yards of soil from 106 areas in Parcel B were excavated. Between July 2004 and January 2005, 12 excavations at sites across HPS were performed to remove soil that was contaminated by fuel-related contaminants; 9,800 cubic yards of soil were removed and disposed of offsite from two areas within Parcel B.

4.2.1.1 IR-10

Both VOCs and hexavalent chromium have been released in IR-10, in the northern portion of Building 123, resulting in two separate contaminant plumes in groundwater. Treatability studies to address VOC contamination that have been conducted in IR-10 include:

- Soil vapor extraction (SVE) treatability study conducted between 2004 and 2006 (TtEMI 2006).
- Zero-valent iron (ZVI) injection treatability study conducted in 2003-2004 (ERRG 2004).

The lateral distribution of TCE, cis-1,2-dichloroethene (DCE), vinyl chloride and hexavalent chromium is shown on Plate 4. Time-series concentration plots of TCE, cis-1,2-DCE, vinyl chloride, and hexavalent chromium in wells in the IR-10 area are presented as Figures 4-1 through 4-4.

The analytical results for IR-10 wells indicate the following:

TCE

- The maximum TCE concentrations in the two sampling events comprising the current semi-annual reporting period were detected in well IR10MW13A1 (5.2 µg/L in the 4Q2007 event and 4.0 µg/L in the 1Q2008 event).
- The current lateral extent of TCE is consistent with recent events.
- TCE concentrations decreased approximately three orders of magnitude in well IR10MW71A following the ZVI Treatability Study, which concluded in early 2004, and in March 2008 increased approximately one order of magnitude. Well IR10MW33A showed a one order of magnitude decrease in TCE concentrations following the ZVI Treatability Study to a historical minimum in 4Q2006, however TCE concentrations have since rebounded to approximately 50% of pre-ZVI Treatability Study concentrations. Well IR10MW61A, installed at the conclusion of the ZVI Treatability Study, has shown highly variable TCE concentrations, however the most recent TCE concentration in this well is approximately 20% of its initial concentration.
- Wells that show TCE concentrations approximating pre-remediation concentrations include IR10MW13A1, IR10MW62A, and IR10MW76A.
- Water quality criteria for TCE were exceeded in 4Q2007 in one IR-10 well (IR10MW13A1), and in one IR-10 well in 1Q2008 (IR10MW71A).

cis-1,2-DCE

- The maximum cis-1,2-DCE concentrations in the two sampling events comprising the current semi-annual reporting period were detected in well IR10MW59A (93 µg/L in

the 4Q2007 event, and IR10MW61A (39 µg/L in the 1Q2008 event).

- The current lateral extent of cis-1,2-DCE is consistent with recent events.
- cis-1,2-DCE concentrations are variable over time, and fluctuate within a range of one to two orders of magnitude. cis-1,2-DCE concentrations have not shown concentration decreases that would be expected as a result of the Treatability Study, and in some wells cis-1,2-DCE concentrations have recently been near or at historical maxima.
- Water quality criteria for cis-1,2-DCE were exceeded in one or both of the two most recent quarterly events in five IR-10 wells (IR10MW13A1, IR10MW33A, IR10MW59A, IR10MW61A, and IR10MW71A).

Vinyl Chloride

- The maximum vinyl chloride concentrations in the two sampling events comprising the current semi-annual reporting period were detected in well IR10MW59A (23 µg/L in the 4Q2007 event, and 61 µg/L in the 1Q2008 event).
- The current lateral extent of vinyl chloride is consistent with recent events.
- Vinyl chloride concentrations in individual wells are variable over time, and generally fluctuate within a range of approximately one order of magnitude or less. Vinyl chloride concentrations are presently near or above historical maxima in wells IR10MW59A and IR10MW61A.
- Water quality criteria for vinyl chloride were exceeded in one or both of the two most recent quarterly events in four IR-10 wells (IR10MW33A, IR10MW59A, IR10MW61A, and IR10MW71A).

Hexavalent Chromium

- Hexavalent chromium was not detected in IR-10 wells in the 4Q2007 event. The maximum hexavalent chromium concentration detected in the 1Q2008 event was in well IR10MW81A (15 µg/L).
- Water quality criteria for hexavalent chromium were not exceeded in the 4Q2007 sampling event in any Parcel B wells. In the 1Q2008 event, hexavalent chromium exceeded water quality criteria only in well IR10MW81A.

4.2.1.2 Exploratory Excavation-05 (EE-05)

Mercury impacts to soil were encountered at Exploratory Excavation (EE) -05. Exploratory Excavation EE-05 is located in IR-26 on the south side of former Building 141 and approximately 50 ft north of Dry Dock 3. In the late 1990s, approximately 5,000 cubic yards of contaminated soil was removed to a depth of approximately 10 feet. The mercury concentration in soil samples collected from the bottom of the excavation was 0.2 to 90 mg/kg (the Hunters

Point Ambient Level for mercury in soil is 2.3 mg/kg), but excavation to a depth of 10 ft was considered protective of human health. Potential impacts to groundwater quality were not evaluated at the time of the excavation, but the removal of the contaminated soil is expected to have a long-term benefit.

Figure 4-5 presents a time-series plot of mercury concentrations in samples from wells near EE-05. The mercury analytical results for EE-05 wells indicate the following:

- The maximum mercury concentrations detected in the two sampling events comprising the current semi-annual reporting period were detected in well IR26MW47A (3.1 µg/L in the 4Q2007 event, and 2.4 µg/L in the 1Q2008 event). This well has historically shown the maximum mercury concentrations in EE-05 wells.
- The lateral extent of mercury is consistent with recent events.
- Mercury concentrations in well IR26MW47A are variable over time, fluctuating between approximately 0.3 µg/L and 3.2 µg/L since 2002. A seasonal trend is evident, with higher mercury concentrations generally present in the summer months. Mercury has not been detected above the 0.6 µg/L HGAL in wells IR26MW48A or IR26MW50A. In well IR26MW49A, mercury concentrations showed an increasing trend, from less than 1 µg/L in 3Q2006 (1st sampling event) to 2.7 µg/L in 3Q2007 (historical maximum in this well), and in March 2008 decreased to 1.5 µg/L.
- Water quality criteria for mercury were exceeded in both of the two most recent quarterly events in two EE-05 wells (IR26MW47A and IR26MW49A).

4.2.1.3 Other Analytes in Parcel B

Water quality criteria were exceeded in Parcel B wells in one or both of the two most recent quarterly events for the following other analytes: arsenic, lead, nickel, pentachlorophenol (PCP), silver, and thallium.

4.2.2 Parcel C

Areas of concern in Parcel C include the following Remedial Units (RUs):

- RU-C1
- RU-C2
- RU-C4
- RU-C5

4.2.2.1 RU-C1

There are four buildings (Building 211, Building 231-north, Building 231-south, and

Building 253) in RU-C1; these buildings were historically used for heavy industrial machining. There were also nine underground storage tanks (USTs) removed from RU-C1 in 1991 and 1993. Chlorinated solvents are the primary contaminants at RU-C1. Soil vapor extraction (SVE) treatability studies were conducted in RU-C1 in 2000/2001 at the junction of Buildings 211 and 253 (IT Corporation 2002c), and near the center of Building 231 (IT Corporation 2002a).

Figure 4-6 presents time-series plots of TCE and cis-1,2-DCE in groundwater at RU-C1; Figure 4-7 shows vinyl chloride, 1,2-DCB, and 1,4-DCB.

The analytical results for RU-C1 wells indicate the following:

TCE

- The maximum TCE concentrations in the two sampling events comprising the current semi-annual reporting period were detected in well IR28MW136A (5.7 µg/L in the 4Q2007 event, and 8.1 µg/L in the 1Q2008 event). No contaminant concentration trends are evident.
- The current lateral extent of TCE is consistent with recent events.
- TCE concentrations in individual wells are variable over time, but fluctuate within a range of one order of magnitude or less.
- Water quality criteria for TCE were exceeded in 4Q2007 in one RU-C1 well (well IR28MW136A). In the 1Q2008 event, TCE water quality exceedances occurred in three wells: IR28MW136A, IR28MW151A, and PA50MW03A.

cis-1,2-DCE

- The maximum cis-1,2-DCE concentrations in the two sampling events comprising the current semi-annual reporting period were detected in well IR28MW136A (42 µg/L in the 4Q2007 event; and 120 µg/L in the 1Q2008 event). This well has generally shown the maximum cis-1,2-DCE concentration in RU-C1.
- The current lateral extent of cis-1,2-DCE is consistent with recent events.
- cis-1,2-DCE concentrations in individual wells are variable over time, and fluctuate within a range of one order of magnitude or less. No contaminant concentration trends are evident.
- Water quality criteria for cis-1,2-DCE were exceeded in one or both of the two most recent quarterly events in three RU-C1 wells (wells IR28MW136A, IR28MW151A, and PA50MW03A).

Vinyl Chloride

- The maximum vinyl chloride concentrations in the two sampling events comprising the current semi-annual reporting period were detected in well IR28MW151A (180

µg/L in the 4Q2007 event, and 300 µg/L in the 1Q2008 event). This well has generally shown the maximum vinyl chloride concentration in RU-C1, and the current quarter maximum vinyl chloride concentration is consistent with previous quarters.

- The current lateral extent of vinyl chloride is consistent with recent events.
- Vinyl chloride concentrations in individual wells are variable over time, and fluctuate within a range of one order of magnitude or less. In well IR28MW151A, concentrations fluctuate between approximately 100 µg/L and 1,000 µg/L, with one exception: vinyl chloride was not detected in this well in 1Q2006 (considered anomalous).
- Water quality criteria for vinyl chloride were exceeded in one or both of the two most recent quarterly events in two RU-C1 wells (wells IR28MW136A and IR28MW151A).

DCB

- Neither 1,2-DCB nor 1,4-DCB were detected in the 4Q2007 event. In the 1Q2008 event, 1,2-DCB and 1,4-DCB were detected only in well PA50MW03A (10 µg/L in the 4Q2007 event; and 2.8 µg/L in the 1Q2008 event).
- DCB chloride concentrations in individual wells are highly variable over time, with historical maxima detected in 3Q2004 and 4Q2005. Current quarter DCB concentrations are near historical minima.
- Water quality criteria for 1,2-DCB were not exceeded in any RU-C1 wells in either of the two sampling events. In the 1Q2008 event, 1,4-DCB exceeded water quality criteria in one well: PA50MW03A.

Other Analytes

- Water quality criteria were exceeded in RU-C1 wells in one or both of the two most recent quarterly events for the following other analytes: benzene, total chromium, hexavalent chromium, PCB-1260, tetrachloroethylene, and trans-1,2-DCE.

4.2.2.2 RU-C2

The two principal sources of contamination for RU-C2 are the sump and dip tank in Building 251 and the pickling and degreasing area in Building 258. Chlorinated solvents are the primary contaminants at RU-C2. In 2000/2001, a SVE treatability study was conducted at the northern side of Building 251 (IT Corporation 2002b).

Figure 4-8 presents time-series plots of TCE and cis-1,2-DCE in groundwater at RU-C2; Figure 4-9 shows vinyl chloride, 1,2-DCB, and 1,4-DCB. The analytical results for RU-C2 wells indicate the following:

TCE

- The maximum TCE concentrations in the two sampling events comprising the current semi-annual reporting period were detected in well IR28MW300F (12 µg/L in the 4Q2007 event), and 10 µg/L in the 1Q2008 event). This well has generally shown the maximum TCE concentration in RU-C2, and the current quarter maximum TCE concentration is consistent with previous quarters.
- The current lateral extent of TCE is consistent with recent events.
- TCE concentrations in individual wells are variable over time, and fluctuate within a range of one order of magnitude or less. Anomalously high TCE concentrations were detected in two RU-C2 wells in 1Q2005 (wells IR58MW32B and IR58MW31A). TCE concentrations in individual wells in the current quarter are approximately the same as 2Q2004 (beginning of time-series plot), with the exception of well IR58MW32B that is presently at a historical minimum.
- Water quality criteria for TCE were exceeded in one or both of the two most recent quarterly events in two RU-C2 wells (wells IR28MW189F and IR28MW300F).

cis-1,2-DCE

- The maximum cis-1,2-DCE concentrations in the two sampling events comprising the current semi-annual reporting period were detected in well IR28MW16F (8.0 µg/L in the 4Q2007 event, and 7.5 µg/L [estimated value] in the 1Q2008 event). Maximum cis-1,2-DCE concentrations in RU-C2 have historically been detected in well IR58MW33B (majority of events) and well IR58MW32B.
- The current lateral extent of cis-1,2-DCE is consistent with recent events.
- cis-1,2-DCE concentrations in individual wells are variable over time, and fluctuate within a range of one order of magnitude or less. Wells that are presently at or near historical minima include: IR28MW216F, IR28MW300F, IR28MW397B, IR58MW31A, IR58MW32B, and IR28MW33B.
- Water quality criteria for cis-1,2-DCE were exceeded in both of the two most recent quarterly events in one RU-C2 well (wells IR28MW216F).

Vinyl Chloride

- The maximum vinyl chloride concentrations in the two sampling events comprising the current semi-annual reporting period were detected in well IR58MW31A (18 µg/L in the 4Q2007 event, and 69 µg/L in the 1Q2008 event). This well has consistently shown the maximum vinyl chloride concentration in RU-C2.
- The current lateral extent of vinyl chloride is consistent with recent events.
- Vinyl chloride concentrations in individual wells are variable over time, and fluctuate

within a range between one and two orders of magnitude. Vinyl chloride concentrations in well IR58MW31A have showed an overall downward trend until August 2007, but have increased in the two most recent events.

- Water quality criteria for vinyl chloride were exceeded in one or both of the two most recent quarterly events in two RU-C2 wells (wells IR58MW31A and IR58MW33B).

1,2-DCB

- The maximum 1,2-DCB concentrations in the two sampling events comprising the current semi-annual reporting period were detected in: well IR58MW31A (9.4 µg/L [estimated value] in the 4Q2007 event, and 14 µg/L in the 1Q2008 event). This well has consistently shown the maximum 1,2-DCB concentration in RU-C2.
- The current lateral extent of 1,2-DCB is consistent with recent events.
- 1,2-DCB chloride concentrations in individual wells are variable over time, and fluctuate within a range of approximately one order of magnitude. The most recent concentrations for well IR58MW32B are historical minima.
- Water quality criteria for 1,2-DCB were not exceeded in any RU-C2 wells in either of the two most recent quarterly events.

1,4-DCB

- The maximum 1,4-DCB concentrations in the two sampling events comprising the current semi-annual reporting period were detected in well IR58MW31A (71 µg/L in the 4Q2007 event, and 100 µg/L in the 1Q2008 event). This well has consistently shown the maximum 1,4-DCB concentration in RU-C2.
- The current lateral extent of 1,4-DCB is consistent with recent events.
- 1,4-DCB chloride concentrations in individual wells are variable over time, and fluctuate within a range of approximately one order of magnitude.
- Water quality criteria for 1,4-DCB were exceeded in one or both of two RU-C2 wells (wells IR58MW31A and IR58MW32B) in the two most recent quarterly events.

Other Analytes

- Water quality criteria were exceeded in RU-C2 wells in one or both of the two most recent quarterly events for the following other analytes: benzene, carbon tetrachloride, chlorobenzene, hexavalent chromium, total chromium, and tetrachloroethylene.

4.2.2.3 RU-C4

Potential contaminant sources at RU-C4 include: five steel dip tanks containing solvents,

paints, acids, and metals located in Building 281; a sump area; solvent-containing USTs; and an above ground storage tank containing sulfuric acid. The primary contaminant at RU-C4 is TCE. Concentrations of PCE, cis-1,2-DCE, and vinyl chloride have also been detected, but at much lower concentrations and over smaller areas than those of TCE. Treatability studies at RU-C4 have included:

- SVE treatability study in 2000/2001 at the northeast corner of Building 272 (IT Corporation 2002d).
- Zero valent iron (ZVI) injection pilot test at RU-C4 in 2002 (TTEMI 2003).
- Zero valent iron (ZVI) injection pilot test at RU-C4 in 2004/2005 (ITSI 2005).

Figure 4-10 presents time-series plots of TCE and cis-1,2-DCE in groundwater at RU-C4; Figure 4-11 shows vinyl chloride, 1,2-DCB, and 1,4-DCB.

The analytical results for RU-C4 wells indicate the following:

TCE

- The maximum TCE concentrations in the two sampling events comprising the current semi-annual reporting period were detected in well IR28MW406 (180 µg/L in the 4Q2007 event, and 95 µg/L in the 1Q2008 event). This well has consistently shown maximum TCE concentrations in RU-C4.
- The current lateral extent of TCE is consistent with recent events.
- TCE concentrations in individual wells are variable over time, and fluctuate within a range between one and two orders of magnitude. No contaminant concentration trends are evident.
- Water quality criteria for TCE were exceeded in one or both of the two most recent quarterly events in seven RU-C4 wells (IR28MW211F, IR28MW272F, IR28MW298A, IR28MW311A, IR28MW312F, IR28MW350F, IR28MW355F, and IR28MW406).

cis-1,2-DCE

- The maximum cis-1,2-DCE concentrations in the two sampling events comprising the current semi-annual reporting period were detected in: well IR28MW211F (62 µg/L [estimated value] in the 4Q2007 event); and IR28MW407 (96 µg/L in the 1Q2008 event).
- The current lateral extent of cis-1,2-DCE is consistent with recent events.
- cis-1,2-DCE concentrations in three wells have shown an order of magnitude decrease since early 2004: wells IR28MW211F, IR28MW311A, and IR28MW407. In other wells, cis-1,2-DCE concentrations are variable over time, and fluctuate

within a range of one order of magnitude.

- Water quality criteria for cis-1,2-DCE were exceeded in one or both of the two most recent quarterly events in four RU-C4 wells (wells IR28MW211F, IR28MW272F, IR28MW406, and IR28MW407).

Vinyl Chloride

- The maximum vinyl chloride concentrations in the two sampling events comprising the current semi-annual reporting period were detected in: well IR28MW211F (40 µg/L in the 4Q2007 event); and IR28MW407 (130 µg/L in the 1Q2008 event). Maximum vinyl chloride concentrations in RU-C4 have historically been detected in these two wells.
- The current lateral extent of vinyl chloride is consistent with recent events.
- Vinyl chloride concentrations in individual wells are variable over time, and fluctuate within a range between one and two orders of magnitude. An anomalously low concentration was detected in IR28MW407 in 3Q2006, and has subsequently rebounded to near the historical maximum concentration.
- Water quality criteria for vinyl chloride were exceeded in both of the two most recent quarterly events in two RU-C4 wells (wells IR28MW211F and IR28MW407).

1,2-DCB

- The maximum 1,2-DCB concentrations in the two sampling events comprising the current semi-annual reporting period were detected in well IR28MW407 (46 µg/L in the 4Q2007 event, and 94 µg/L in the 3Q2007 event). This well has consistently shown maximum historical concentrations in RU-C4 wells.
- The current lateral extent of 1,2-DCB is consistent with recent events.
- 1,2-DCB concentrations in well IR28MW407 decreased approximately 200% between 2Q2004 and 2Q2005 to approximately 50 µg/L, and since has fluctuated between approximately 50 µg/L and 100 µg/L. 1,2-DCB concentrations in IR28MW211F are relatively stable.
- Water quality criteria for 1,2-DCB were not exceeded in any RU-C4 wells in either of the two most recent quarterly events.

1,4-DCB

- The maximum 1,4-DCB concentrations in the two sampling events comprising the current semi-annual reporting period were detected in well IR28MW407 (11 µg/L in the 4Q2007 event, and 22 µg/L in the 1Q2008 event). This well has consistently shown the historical maximum 1,4-DCB concentrations in RU-C4.

- The current lateral extent of 1,4-DCB is consistent with recent events.
- 1,4-DCB concentrations in well IR28MW407 decreased approximately 60% between 3Q2004 and 2Q2005, and subsequently have been relatively stable. 1,4-DCB concentrations in IR28MW211F are low and stable.
- Water quality criteria for 1,4-DCB were exceeded in both of the two most recent quarterly events in one RU-C4 well (well IR28MW407).

Other Analytes

- Water quality criteria were exceeded in RU-C4 wells in one or both of the two most recent quarterly events for the following other analytes: benzene, carbon tetrachloride, and Freon 150.

4.2.2.4 RU-C5

Two principal sources of groundwater contamination at RU-C5 are the sump and dip tank in Building 134 located in IR-25, and the former fuel tank farm located in IR-06. The primary concern for RU-C5 is chlorinated solvents, but other VOCs, SVOCs, pesticides, PCBs, and metals are also present in groundwater at IR-25. Releases from these two source areas have resulted in two separate but closely spaced VOC plumes in groundwater. Two treatability studies have been conducted at Building 134:

- SVE treatability study in 2000/2001 (IT Corporation 2001).
- *In Situ* Bioremediation (ISB) treatability study in 2004/2005 (Shaw Environmental 2005).

Figure 4-12 presents time-series plots of TCE and cis-1,2-DCE in groundwater at RU-C5; Figure 4-13 shows vinyl chloride, 1,2-DCB, and 1,4-DCB. Note that well IR25MW16A is not assigned by the SAP to RU-C5, but is included in the discussion of RU-C5 due to its proximity and relationship to RU-C5 contamination. The analytical results for RU-C5 wells indicate the following:

TCE

- The maximum TCE concentrations in the two sampling events comprising the current semi-annual reporting period were detected in: well IR06MW59A1 (140 µg/L in the 4Q2007 event); and IR06MW32A (5.2 µg/L in the 1Q2008 event). Prior to September 2006, maximum TCE concentrations were detected in well IR25MW16A. Since that time, maximum TCE concentrations have been detected in well IR06MW59A1.
- The current lateral extent of TCE is consistent with recent events.
- TCE concentrations in individual wells are variable over time, and fluctuate within a range of approximately one order of magnitude, with one exception: an order of

magnitude increase in TCE concentration was detected in well IR06MW59A1 in 4Q2006 relative to the previous quarterly events. TCE concentrations in that well have subsequently shown an overall decrease. The most recent event showed TCE concentration in IR25MW16A to be a historical minimum. No contaminant concentration trends are evident.

- Water quality criteria for TCE were exceeded in one or both of the two most recent quarterly events in four RU-C5 wells (wells IR06MW32A, IR06MW35A, IR06MW59A1, and IR25MW16A).

cis-1,2-DCE

- The maximum cis-1,2-DCE concentrations in the two sampling events comprising the current semi-annual reporting period were detected in well IR25MW16A (110 µg/L in the 4Q2007 event and 16 µg/L in the 1Q2008 event). Well IR25MW16A has consistently showed maximum or near maximum cis-1,2-DCE concentrations in RU-C5.
- The current lateral extent of cis-1,2-DCE is consistent with recent events.
- cis-1,2-DCE concentrations in individual wells are variable over time, and fluctuate within a range of approximately one order of magnitude. No contaminant concentration trends are evident, except that TCE concentrations in the most recent quarter are at or near historical maxima in two wells (IR06MW59A1 and IR06MW40A). The most recent event showed cis-1,2-DCE concentration in IR25MW16A to be near the historical minimum.
- Water quality criteria for cis-1,2-DCE were exceeded in the 4Q2007 event in three RU-C5 wells (wells IR06MW35A, IR06MW59A1, and IR25MW16A). In the 1Q2008, cis-1,2-DCE exceeded water quality criteria only in well IR25W16A.

Vinyl Chloride

- The maximum vinyl chloride concentrations in the two sampling events comprising the current semi-annual reporting period were detected in well IR06MW40A (110 µg/L in the 4Q2007 event, and 120 µg/L in the 1Q2008 event). This well, located on the downgradient (north) leading edge of the IR-06 VOC plume, has shown the maximum vinyl chloride concentration since 4Q2006. Previously, well IR06MW59A1, located in the upgradient portion of that plume, showed the maximum vinyl chloride concentrations.
- Vinyl chloride concentrations in two wells (IR06MW59A1 and IR06MW35A) have shown a general decrease since early 2004. Well IR25MW16A showed stable vinyl chloride concentrations between mid-2006 and mid-2007, then increased to a historical maximum in late 2007, and subsequently decreased to near historical minimum in the most recent event. Well IR06MW40A showed a sharp concentration increase, from non-detect in 3Q2006 to over 100 µg/L by 1Q2007, and subsequently

has remained stable.

- Water quality criteria for vinyl chloride were exceeded in one or both of the two most recent quarterly events in five RU-C5 wells (wells IR06MW32A, IR06MW35A, IR06MW40A, IR06MW59A1, and IR25MW16A).
- The increase in vinyl chloride concentration in downgradient well IR06MW40A since mid-2006 indicates that the IR-06 VOC plume is migrating downgradient (to the north-northeast).

1,2-DCB

- The maximum 1,2-DCB concentrations in the current semi-annual reporting period were detected in well IR06MW35A (3.3 µg/L in the 4Q2007 event, and 0.28 µg/L [estimated value] in the 1Q2008 event). The current semi-annual reporting period maximum concentration is below historical maxima.
- The current lateral extent of 1,2-DCB is consistent with recent events.
- 1,2-DCB concentrations are highly variable over time, and fluctuate in a range between one and two orders of magnitude. A seasonal trend of increasing concentration in the dry season (between June and September) is evident.
- Water quality criteria for 1,2-DCB were not exceeded in any RU-C5 wells in either of the two quarterly events comprising the current semi-annual reporting period.

1,4-DCB

- In the 4Q2007 event, 1,4-DCB was detected only in well IR06MW35A (0.98 µg/L). 1,4-DCB was not detected in any RU-C5 wells in the 1Q2008 event.
- 1,4-DCB concentrations are highly variable over time, and fluctuate in a range between one and two orders of magnitude. No contaminant concentration trends are evident.
- Water quality criteria for 1,4-DCB were not exceeded in any RU-C5 wells in either of the two quarterly events comprising the current semi-annual reporting period.

Other Analytes

- Water quality criteria were exceeded in RU-C5 wells in one or both of the two most recent quarterly events for the following other analytes: benzene, carbon tetrachloride, total chromium, Freon 150, hexavalent chromium, tetrachloroethene, and trans-1,2-DCE.

4.2.2.5 NAPL Measurements in Parcel C

Measurements of light non-aqueous phase liquid (LNAPL) and dense non-aqueous phase liquid (DNAPL) are performed annually, in the third quarter of each year. No NAPL measurements were made in the current semi-annual reporting period.

4.2.3 Parcel D

The area of concern in Parcel D is IR-09. The primary sources for groundwater contamination at IR-09 are associated with industrial metal finishing and painting. The contaminant releases at IR-09 have resulted in hexavalent chromium, cyanide, and VOC contamination.

Figure 4-14 presents time-series plots of total chromium and hexavalent chromium in groundwater at IR-09.

The analytical results for IR-09 wells indicate the following:

Hexavalent and Total Chromium

- The maximum hexavalent chromium concentrations in the two sampling events comprising the current semi-annual reporting period were detected in well IR09MW63A (64.5 µg/L in the 4Q2007 event) and IR09MW62A (37.3 µg/L in the 1Q2008 event). Likewise, maximum total chromium concentrations were detected in wells IR09MW63A (65.7 µg/L in the 4Q2007 event) and IR09MW62A (27.6 µg/L in the 1Q2008 event). Well IR09PPY1, although not sampled due to inaccessibility in both the 4Q2007 and 1Q2008 events, has shown maximum hexavalent and total chromium concentrations in IR-09 since 4Q2005.
- The current lateral extent of hexavalent and total chromium is consistent with recent events.
- Hexavalent and total chromium concentrations have been relatively stable since 4Q2005.
- Water quality criteria for total chromium were exceeded in one or both of the quarterly events comprising the current semi-annual reporting period in four IR-09 wells (IR09MW35A, IR09MW37A, IR09MW62A, and IR09MW63A), and were exceeded for hexavalent chromium in one IR-09 well (IR09MW63A).

TCE

- TCE was not detected in either the 4Q2007 or 1Q2008 events. Well IR09MW51F, although not sampled due to inaccessibility in both events, has consistently shown the maximum TCE concentrations in IR-09.
- The current lateral extent of TCE is consistent with recent events.

- Water quality criteria for TCE were not exceeded in any IR-09 wells in either of the two most recent sampling events.

Other Analytes

- Water quality criteria were not exceeded for any other analytes in IR-09 wells in either quarterly event of the current semi-annual reporting period.

4.2.4 Parcel E

The two areas of concern in Parcel E include: the Northwest Bay Fill Area (NBFA), and Former Oil Reclamation Ponds Area (ORPA).

4.2.4.1 Northwest Bay Fill Area

The NBFA is primarily located in IR-02 and IR-36 (see Plate 1). The contamination in the groundwater at the NBFA is associated with the former disposal area along the shoreline near Building 600. The NBA contains construction debris and industrial wastes. In addition to disposal debris (such as paint cans, drums, tanks, and pipe lagging) and liquid wastes (such as solvents and waste oils), potential sources of groundwater contamination include radium-containing devices removed from Navy ships and submarines that were disposed of in this area.

Water quality criteria were exceeded in NBFA wells in one or both of the two most recent quarterly events for the following analytes: antimony, barium, copper, nickel, selenium, silver, thallium, and zinc.

The concentrations and lateral extent of contaminants in this area are consistent with recent events.

4.2.4.2 Former Oil Reclamation Ponds Area

The ORPA is located in IR-03 (see Plate 1), and consisted of two former oil ponds used as part of a waste oil reclamation system. In addition to VOCs, PCBs, and TPH in waste oil, potential contaminant sources include sandblasting wastes used as fill material and disposed on the ground surface, industrial waste fill material containing various metal pipes, plastics, and tires, and alleged dumping of liquid and sandblast waste.

Water quality criteria were exceeded in ORPA in one or both of the two most recent quarterly events for the following analytes: 2-methylnaphthalene; antimony, barium, benzene, nickel, selenium, silver, and vinyl chloride.

The concentrations and lateral extent of contaminants in this area are consistent with recent events.

4.2.4.3 Radionuclides

In each of the 4Q2007 and 1Q2008 events, groundwater samples collected from 8 Parcel E wells were analyzed for the radionuclides radium-226 and cesium-137.

In the 4Q2007 event, radium-226 (only) was detected above the practical quantitation limit (PQL) in two wells:

- IR02MW126A (detected at 0.999 ± 0.40 picocuries/Liter [pCi/L])
- IR02MW175A (detected at 0.482 ± 0.33 pCi/L)

In the 1Q2008 event, no radiological activity was detected above the PQLs.

4.2.4.4 NAPL Measurements in Parcel E

Measurements of light non-aqueous phase liquid (LNAPL) and dense non-aqueous phase liquid (DNAPL) are performed annually, in the third quarter of each year. No NAPL measurements were made in the current semi-annual reporting period.

4.2.5 Parcel E-2

The primary area of concern in Parcel E-2 is the Industrial Landfill Area (ILA), which comprises approximately 22 acres and is primarily located in IR-01, but also extends into portions of IR-02, IR-12, IR-56, and IR-72. The ILA includes the area of known waste disposal, as well as areas to the southwest of the landfill ("Panhandle" area) and to the southeast of the landfill ("Other Landfill Area"). The total area is also referred to in the SAP as the Landfill Industrial Landfill Study Area. The boundaries of the Industrial Landfill Study Area are generally coincident with the Parcel E-2 boundaries. Potential contaminant sources associated with the ILA include sandblasting wastes, asbestos wastes, paints, solvents, waste fuels and oils containing PCBs, metal debris, and releases from drums. Note that wells IR01MW60A and IR01MW64A are not assigned in the SAP to the ILA, but are discussed herein as ILA wells due to their location.

Water quality criteria were exceeded in ILA wells in one or both of the two most recent quarterly events for the following analytes: 1,1-DCA; 1,1-DCE; 1,4-DCB; ammonia; antimony; arsenic; barium; benzene; chlorobenzene; chlorpyrifos; cis-1,2-DCE; copper; cyanide; dieldrin; Freon-150; nickel; PCB-1260; P,P'-DDT; selenium; silver; TCE; tetrachloroethene; thallium; and, vinyl chloride.

The concentrations and lateral extent of contaminants in Parcel E-2 are consistent with previous events.

4.3 Quality Control Summary

Appendix I contains the Quality Control Summary Report (QCSR) that discusses quality control (QC) activities for the current semi-annual reporting period. In summary:

- Field sampling procedures were conducted in compliance with the 2004 BGMP SAP, except as noted in Section 4.4.
- A total of 400 groundwater samples, with 172 accompanying field QC samples, were collected and analyzed in the two quarterly sampling events comprising the semi-

annual period.

- Data validation was performed on 100 percent of the data, with approximately 80 percent undergoing a Level III data validation and 20 percent undergoing a Level IV validation in accordance with the SAP.
- A total of 35,862 analytical results were evaluated by a third-party data validation firm during the data validation process.
- The data quality assessment process determined that the precision, accuracy, representativeness, comparability, completeness and sensitivity (PARCCS) parameters were met, and the results are of good quality and are acceptable for use during the decision-making process.

4.4 Deviations from the SAP

Tables 4-10 and 4-11 list all SAP deviations during the 4Q2007 and 1Q2008 sampling events, respectively. The SAP deviations reflect modifications to the pre-sampling purging parameter stabilization criteria developed at the HPS Groundwater Meeting on July 19, 2006:

1. The three most important groundwater stabilization parameters, in order of decreasing importance, are: (1) specific conductance, (2) dissolved oxygen, and (3) pH. The stabilization criteria for these parameters are: (1) specific conductance: plus or minus 3%, (2) pH: plus or minus 0.2 pH units, and (3) dissolved oxygen: plus or minus 10% or 0.2 mg/L (whichever is greater).
2. For determining whether a well has stabilized, the minimum and maximum values of the last three readings for specific conductance, dissolved oxygen and pH are compared, without regard to order.
3. Other parameters, including temperature, turbidity, and oxidation-reduction potential are monitored and recorded. However, they are not used to determine stabilization, and are used only for informational purposes. The stabilization criteria previously utilized for these parameters are: (1) temperature: plus or minus 0.2 °C, (2) turbidity: plus or minus 10% of the prior reading or three consecutive readings below 10 nephelometric turbidity units (NTUs) (whichever is greater), and (3) oxygen-reduction potential: plus or minus 20 millivolts.

The following summarizes SAP deviations from each event in the current semi-annual reporting period.

4.4.1 4Q2007 Event

- Water levels were not measured in 52 monitoring wells because these wells were inaccessible (28 wells), were damaged (6 wells), were obstructed (3 wells), were wells where NAPL has historically been present (13 wells), or were wells that had been previously decommissioned but not yet removed from the compliance program by a SAP addendum (2 wells). Water level measurements were made outside the

tidal time window (allowed measurement interval) in 2 wells.

- Groundwater samples were not collected from 30 monitoring wells because these wells were inaccessible (10 wells), were damaged (4 wells), were obstructed (5 wells), had insufficient water (4 wells), were wells where NAPL has historically been present (6 wells), or were wells that had been previously decommissioned but not yet removed from the compliance program by a SAP addendum (1 well).
- Water quality stabilization readings were not obtained at the required 1-Liter frequency at 3 wells. However the readings demonstrated that the water quality stabilized prior to sampling.
- Specific conductance did not stabilize prior to sampling in 2 wells.

The sampling pump intakes were placed within the well screened intervals during the purging and sampling of all wells.

4.4.2 1Q2008 Event

- Water levels were not measured in 44 monitoring wells because these wells were inaccessible (31 wells) or were wells where NAPL has historically been present (13 wells).
- Groundwater samples were not collected from 27 monitoring wells because these wells were inaccessible (20 wells), were wells where NAPL has historically been present (6 wells), or there was evidence of soil intrusion into the well (1 well).
- Specific conductance did not stabilize prior to sampling in 1 well.

The sampling pump intakes were placed within the well screened intervals during the purging and sampling of all wells.

Table 4-12 summarizes SAP deviations (inability to measure water level or collect a groundwater sample) over the previous 4 quarterly events. This table is updated quarterly (wells where deviations have been resolved are deleted, and wells with new deviations are added). The objective of this table is to identify compliance wells for which corrective action may be required to continue meeting BGMP objectives. In summary:

- 13 wells had a deviation in 2 or more quarterly events.
- Deviations that occurred in both of the two most recent quarters were limited to well inaccessibility.
- Deviations that occurred in both of the two most recent quarters precluded depth to water measurement (only) at 7 wells, groundwater sampling (only) at 3 wells, and both depth to water measurement and sampling at 3 wells.

Table 4-12 includes recommended corrective actions to address the recurring SAP deviations.

This page left blank intentionally

5.0 Summary and Conclusions

Groundwater elevations were measured in the two quarterly events comprising the current semi-annual reporting period: 350 wells on October 19, 2007 (4Q2007), and 340 wells on March 13, 2008 (1Q2008). Groundwater in the A-Aquifer generally flows toward San Francisco Bay from upland recharge areas in the non-Navy property. In Parcels B and C, flow toward the Bay is relatively uniform except for small, relatively minor disturbances that may be caused by preferential flow into and recharge from subsurface utility trenches. Groundwater elevations in much of Parcels D and E have historically been anomalously low (often below sea level), compared to those elsewhere on HPS.

The potentiometric surface in Parcel D (and to a lesser extent in Parcel E) has historically been highly influenced by groundwater flow into ruptured sanitary sewer lines. These lines drained to the lift station near Building 819 where the water was pumped offsite to the local sewage treatment plant. The lift station was deactivated in May 2007 and removal of the Parcel D sanitary sewer underground piping system is ongoing. Groundwater levels have subsequently rebounded in Parcel D, most significantly in the historical groundwater depression in the central and western half of the parcel. The lateral extent of the groundwater depression (lower than mean sea level) in the quarter prior to sanitary sewer pumping shutoff (2Q2007) was 73 acres. In the subsequent year the depression has decreased to an area of 5 acres.

The groundwater flow pattern in Parcel E-2 shows much less influence from groundwater flow into ruptured sanitary sewer lines than is present in Parcels D and E.

Lateral gradients in the B-aquifer are relatively lower than the A-aquifer and are generally similar for 4Q2007 and 1Q2008. From quarter to quarter, groundwater elevations in the B-Aquifer typically fluctuate within a narrow range.

Groundwater sampling was conducted in the two quarterly events comprising the current semi-annual reporting period: 201 wells in 4Q2007 and 225 wells in 1Q2008.

In the 4Q2007 event, water quality criteria exceedances (MCLs, HGALs, and/or NAWQC) were reported in 65 analyses for metals (11 different metals), 85 analyses for VOCs (12 different VOCs), and 29 analyses for four other compounds (2-methylnaphthalene, ammonia, chlorpyrifos, and cyanide).

In the 1Q2008 event, water quality criteria exceedances (MCLs, HGALs, and/or NAWQC) were reported in 61 analyses for metals (11 different metals), 72 analyses for VOCs (12 different VOCs), and 29 analyses for six other compounds (ammonia, cyanide, dieldrin, P-P'-DDT, PCB-1260, and pentachlorophenol).

The current magnitude and lateral extent of contamination in groundwater are generally consistent with previous quarters, with one exception: vinyl chloride in RU-C5 well IR06MW40A, monitoring the IR-06 VOC plume, appears to be migrating downgradient (to the north-northeast).

Eight wells were analyzed for radionuclides (cesium-137 and radium-226) in each of the two quarterly events. The only radionuclide detected in the 4Q2007 event was radium-226 (0.999 pCi/L in well IR02MW126A, and 0.482 pCi/L in well IR02MW175A). No radionuclides were detected in the 1Q2008 event.

The data quality assessment process determined that the precision, accuracy, representativeness, comparability, completeness and sensitivity (PARCCS) parameters were met, and the results are of good quality and are acceptable for use during the decision-making process.

The following changes were made to the compliance monitoring well network in the current semi-annual reporting period:

- Added seven pre-existing wells to the program, for one-time cyanide sampling in Parcel D (to be sampled in 2Q2008).
- Removed 26 wells from the compliance program (depth to water measurement, sampling, or both) (effective in the 1Q2008 event).

6.0 References

- CE2-Kleinfelder Joint Venture, 2007a. Final Addendum 1 to the Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan), Basewide Groundwater Monitoring Program, Hunters Point Shipyard, San Francisco, California. April.
- CE2-Kleinfelder Joint Venture, 2007b. Final Addendum 2 to the Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan), Basewide Groundwater Monitoring Program, Hunters Point Shipyard, San Francisco, California. December.
- Engineering/Remediation Resources Group (ERRG), 2004. Cost and Performance Report, Zero-Valent Iron Injection Treatability Study, Building 123, Parcel B, Hunters Point Shipyard, San Francisco, California. June.
- Innovative Technological Solutions, Inc. (ITSI), 2005. Final Zero-Valent Iron Injection Treatability Study Report, Parcel C, Hunters Point Shipyard, San Francisco, California. April 20.
- IT Corporation, 2001. Draft Phase II Soil Vapor Extraction Treatability Study Report – Building 134, IR-25, Parcel C Hunters Point Shipyard, San Francisco, California. Document Control Number 3278. December 31.
- IT Corporation, 2002a. Draft Phase II Soil Vapor Extraction Treatability Study Report – Building 231, IR-28, Parcel C Hunters Point Shipyard, San Francisco, California. Document Control Number 2047. May 23.
- IT Corporation, 2002b. Draft Phase II Soil Vapor Extraction Treatability Study Report – Building 251, IR-28, Parcel C Hunters Point Shipyard, San Francisco, California. Document Control Number 2048. April 29.
- IT Corporation, 2002c. Draft Phase II Soil Vapor Extraction Treatability Study Report – Building 211/253, IR-28, Parcel C Hunters Point Shipyard, San Francisco, California. Document Control Number 2046. March 21.
- IT Corporation, 2002d. Draft Phase II Soil Vapor Extraction Treatability Study Report – Building 272, IR-28, Parcel C Hunters Point Shipyard, San Francisco, California. Document Control Number 2049. February 28.
- National Oceanic and Atmospheric Administration [NOAA], 2007. NOAA Center for Operational Oceanographic Products and Services. Tidal Prediction NOAA station ID 9414358 - Hunters Point Shipyard, San Francisco, California.
- PRC Environmental Management Inc. (PRC), 1996. Estimation of Hunters Point Shipyard Groundwater Ambient Levels Technical Memorandum. September 16.
- Shaw Environmental, Inc., 2005. *In Situ* Sequential Aerobic-Anaerobic Bioremediation Treatability Study – RU-C5, Building 134. Hunters Point Shipyard, San Francisco, California. August.
- SulTech, 2006. Draft Parcel B Technical Memorandum in Support of a Record of Decision Amendment, Hunters Point Shipyard San Francisco, California. March 28.

- Tetra Tech EM, Inc. (TtEMI), 1999. Final Parcel B Remedial Design Document V, Remedial Action Monitoring Plan, Remedial Action, Hunters Point Shipyard, San Francisco, California, Revision 2. July 2.
- TtEMI, 2003. Final Cost and Performance Report, FEROXsm Injection Technology Demonstration, Parcel C, Remedial Unit C4, Hunters Point Shipyard, San Francisco, California, July 11
- TtEMI, 2004. Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Basewide Groundwater Monitoring Program, Hunters Point Shipyard, San Francisco, California, August 20.
- TtEMI, 2005. Data Validation Statement of Work. February.
- TtEMI, 2006. Personal communication (e-mail) from T. Mower (TtEMI) to J.R. Copland (CE2 Corporation), March 2.
- TetraTech EC, Inc., 2006. Treatability Study for Various Organic Compounds, Remedial Unit-C1, Building 253, Hunters Point Shipyard, San Francisco, California. October 13.
- U.S. Department of the Navy, 2002. Comprehensive Long-term Environmental Action Navy Clean II Statement of Work.
- U.S. Department of the Navy, 1997. Hunters Point Shipyard, Parcel B Record of Decision, October 7.
- U.S. Department of the Navy, 2002. Comprehensive Long-term Environmental Action Navy Clean II Statement of Work.
- U.S. Department of the Navy, 2003. Informal Briefing: Environmental Clean-Up Sites at Hunters Point Shipyard, 2pp., September 18.
- U.S. Environmental Protection Agency, 1999. National Functional Guidelines for Organic Data Review. Office of Emergency and Remedial Response. Washington, DC. EPA-540/R-99-008. April.
- U.S. Environmental Protection Agency, 2001. EPA Requirements for Quality Assurance Project Plans. EPA QA/R-5. Office of Environmental Information. Washington DC. EPA/600/R-96/055. March.
- U.S. Environmental Protection Agency, 2004. National Functional Guidelines for Inorganic Data Review. Office of Emergency and Remedial Response. Washington, DC. EPA-540/R-04/004. October.

Tables

This page left blank intentionally

Table 1-1. Monitoring well construction details.

Well ID	Parcel	Area of Concern	Current Top of Casing (ft MSL)	TOS depth (ft below TOC)	BOS depth (ft below TOC)	Dedicated Pump Intake (ft below TOC)	SAP required DTW?	SAP required sampling?	comments
IR01MW02B	NNP	ILA	20.61	28.3	38.3	34.0	Y	Y	
IR01MW03A	NNP	ILA	19.89	12.5	27.5	21.0	Y	Y	
IR01MW05A	NNP	ILA	22.56	12.4	29.4	23.5	Y	Y	
IR01MW07A	E-2	ILA	19.02	7.3	24.3	NA	N1	N	decommissioned
IR01MW09B	E-2	ILA	10.05	31.4	41.4	37.0	Y	Y	
IR01MW10A	E-2	ILA	13.75	4.8	21.8	15.0	Y	Y	
IR01MW11A	E-2	ILA	17.96	7.1	19.1	NA	Y	N	
IR01MW12A	E-2	ILA	18.25	7.0	24.0	NA	Y	N	
IR01MW16A	E-2	ILA	24.55	15.4	30.4	NA	Y	N	
IR01MW17B	E-2	ILA	29.55	44.5	54.5	NA	Y	N2	
IR01MW18A	E-2	ILA	23.58	15.6	33.6	NA	Y	N	
IR01MW26B	E-2	ILA	23.95	48.3	58.3	54.0	Y	Y	
IR01MW31A	E-2	ILA	13.81	8.2	26.2	17.0	Y	Y	
IR01MW366A	E-2	ILA	17.31	7.2	17.2	17.5	N	N2	
IR01MW366B	E-2	ILA	16.70	46.4	56.4	51.5	Y	Y	
IR01MW367A	E-2	ILA	12.12	4.4	14.4	NA	N2	N2	
IR01MW38A	E-2	ILA	17.36	12.9	25.9	19.0	Y	Y	
IR01MW400A	NNP	ILA	11.58	7.4	22.4	NA	Y	N	
IR01MW401A	E	ILA	13.87	4.6	19.6	NA	N	N	
IR01MW402A	NNP	ILA	12.51	4.7	19.7	NA	Y	N	
IR01MW403A	NNP	ILA	13.00	5.6	20.6	14.5	Y	Y	
IR01MW403B	E-2	ILA	10.54	26.2	36.2	31.0	Y	Y	
IR01MW42A	E-2	ILA	13.28	18.5	27.0	21.5	Y	Y	
IR01MW43A	E-2	ILA	12.16	7.0	24.5	NA	N1	N1	decommissioned
IR01MW44A	E-2	ILA	9.22	6.6	10.6	NA	N1	N1	decommissioned
IR01MW47B	E-2	ILA	12.31	37.0	47.0	NA	N1	N1	decommissioned
IR01MW48A	E-2	ILA	10.96	6.9	19.9	14.7	Y	Y	
IR01MW53B	E-2	ILA	10.01	35.2	45.2	41.8	Y	Y	
IR01MW58A	E-2	ILA	9.19	6.4	18.9	NA	N2	N2	
IR01MW60A	E-2	ILA	14.60	9.5	19.5	16.0	Y1	Y1	
IR01MW62A	E-2	ILA	7.91	4.3	14.3	10.4	Y	Y	
IR01MW63A	E-2	ILA	7.88	5.4	19.4	12.8	N	Y	
IR01MW64A	E-2	ILA	14.27	8.7	18.7	14.0	Y1	Y1	
IR01MW1-2	E-2	ILA	13.22	6.4	21.4	NA	Y	N	

Table 1-1. Monitoring well construction details.

Well ID	Parcel	Area of Concern	Current Top of Casing (ft MSL)	TOS depth (ft below TOC)	BOS depth (ft below TOC)	Dedicated Pump Intake (ft below TOC)	SAP required DTW?	SAP required sampling?	comments
IR01MWI-3	E-2	ILA	13.80	5.2	18.2	NA	N1	N1	decommissioned
IR01MWI-5	E-2	ILA	24.18	12.9	27.9	NA	Y	N	
IR01MWI-6	E-2	ILA	9.55	4.7	12.2	NA	N	N2	
IR01MWI-7	E-2	ILA	5.81	3.0	13.0	8.3	Y	Y	
IR01MWI-8	E-2	ILA	6.64	4.5	14.5	8.6	Y	Y	
IR01MWI-9	E-2	ILA	8.04	3.7	13.7	NA	Y	N	
IR01MWLF1A	E-2	ILA	20.83	7.3	22.3	20.0	Y	Y	
IR01MWLF2A	E-2	ILA	19.62	8.5	23.5	18.5	Y	Y	
IR01MWLF4A	E-2	ILA	14.88	5.3	25.3	NA	N2	N2	
IR01MWLF4B	E-2	ILA	14.48	41.2	56.2	48.5	Y	Y	
IR01P03A	E	ILA	20.13	7.8	27.8	NA	N	N	decommissioned
IR01P03AA	E	ILA	21.86	12.4	27.4	NA	N	N	
IR01P03AB	E	ILA	19.87	11.4	26.4	NA	N	N	
IR01P04A	E	ILA	21.61	10.3	30.3	NA	N	N	
IR01P18AB	E	ILA	18.91	9.1	14.1	NA	N	N	
IR02MW101A1	E	NBFA	11.23	9.0	19.0	NA	Y	N	
IR02MW101A2	E	NBFA	11.22	29.0	36.0	NA	Y	N	
IR02MW114A1	E	NBFA	13.63	7.0	12.0	NA	Y	N	
IR02MW114A2	E	NBFA	12.43	13.8	25.8	NA	N2	N	
IR02MW114A3	E	NBFA	13.29	43.7	50.7	NA	Y	N	
IR02MW126A	E	NBFA	11.36	6.0	15.0	12.6	Y	Y	
IR02MW127B	E	NBFA	14.59	56.1	66.1	NA	N1	N1	decommissioned
IR02MW141A	E	NBFA	15.49	8.0	18.0	NA	N	N1	decommissioned
IR02MW146A	E	ORPA	11.30	7.9	19.9	NA	Y	N	
IR02MW147A	E	NBFA	8.36	5.2	10.2	8.5	Y	Y	
IR02MW149A	E	NBFA	8.72	7.1	22.1	14.9	Y	Y	
IR02MW173A	E	ORPA	9.51	7.7	20.7	NA	Y	N	
IR02MW175A	E	IR-02	10.70	11.9	33.9	21.5	Y	Y	
IR02MW179A	E	IR-02	11.23	7.4	20.9	15.5	Y	Y	
IR02MW183A	E	IR-02	10.40	5.7	35.7	NA	N2	N	
IR02MW196A	E	IR-02	8.05	4.2	11.2	NA	Y	N	
IR02MW206A1	E	IR-02	7.43	3.9	8.9	NA	Y	N	
IR02MW206A2	E	IR-02	7.41	11.6	21.6	NA	N2	N2	
IR02MW209A	E	IR-02	6.34	10.1	20.1	15.1	Y	Y	

Table 1-1. Monitoring well construction details.

Well ID	Parcel	Area of Concern	Current Top of Casing (ft MSL)	TOS depth (ft below TOC)	BOS depth (ft below TOC)	Dedicated Pump Intake (ft below TOC)	SAP required DTW?	SAP required sampling?	comments
IR02MW210B	E	IR-02	9.17	23.8	31.8	NA	Y	N	
IR02MW298A	E	NBFA	11.79	7.9	22.9	NA	Y	N	
IR02MW299A	E	IR-02	10.56	8.0	23.0	NA	Y	N	
IR02MW300A	E	IR-02	9.00	9.7	24.7	NA	N1	N1	decommissioned
IR02MW301A	E	IR-02	9.47	13.5	33.5	23.0	Y1	Y1	
IR02MW372A	E	NBFA	14.21	4.2	14.2	NA	N1	N	decommissioned
IR02MW373A	E	NBFA	11.34	4.5	9.5	NA	Y	N	
IR02MW87A	E	ILA	8.48	4.1	14.1	NA	N	N	
IR02MW89A	E	IR-02	10.08	7.5	22.5	NA	Y	N	
IR02MW93A	E	IR-02	7.25	3.6	18.6	NA	Y	N	
IR02MW97A	E	ORPA	8.95	7.3	24.3	NA	Y	N	
IR02MWB-1	E	ORPA	8.46	5.1	20.1	12.9	Y	Y	
IR02MWB-2	E	NBFA	11.88	4.7	19.7	NA	Y	N2	
IR02MWB-3	E	NBFA	12.95	4.8	19.8	NA	N1	N1	decommissioned
IR02MWB-5	E	IR-02	4.74	3.0	17.0	NA	Y	N2	
IR02MWC5-W	E	NBFA	7.49	4.4	14.4	NA	N2	N2	
IR02P126AA	E	NBFA	10.58	5.8	15.8	NA	N	N	
IR02P126AB	E	NBFA	11.00	6.0	16.0	NA	N	N	
IR02P93AA	E	NBFA	6.93	4.1	19.1	NA	N	N	
IR02P93AB	E	NBFA	7.11	3.5	18.5	NA	N	N	
IR02P97AA	E	ORPA	7.09	6.1	24.1	NA	Y	N	
IR02P97AB	E	ORPA	7.54	5.6	25.6	NA	N1	N	decommissioned
IR03MW218A1	E	ORPA	11.92	8.3	14.3	NA	Y	N	
IR03MW218A2	E	ORPA	12.26	16.8	21.8	20.5	Y	Y	
IR03MW218A3	E	ORPA	12.00	24.1	34.1	NA	Y	N	
IR03MW224A	E	ORPA	10.92	7.5	15.5	13.5	Y	Y	
IR03MW225A	E	ORPA	12.27	4.0	19.0	NA	Y	N	
IR03MW226A	E	ORPA	11.81	4.0	19.0	NA	Y	N	
IR03MW228B	E	ORPA	12.12	62.1	72.1	67.5	Y	Y	
IR03MW342A	E	ORPA	8.48	6.9	16.4	12.5	Y	Y	
IR03MW369A	E	ORPA	10.01	4.5	19.5	NPI	Y	Y	
IR03MW370A	E	ORPA	11.19	5.5	20.5	NPI	Y	Y	
IR03MW371A	E	ORPA	12.48	5.4	20.4	NPI	Y	Y	
IR03MW372A	E	ORPA	8.18	4.9	19.9	NA	Y	N	

Table 1-1. Monitoring well construction details.

Well ID	Parcel	Area of Concern	Current Top of Casing (ft MSL)	TOS depth (ft below TOC)	BOS depth (ft below TOC)	Dedicated Pump Intake (ft below TOC)	SAP required DTW?	SAP required sampling?	comments
IR03MW373B	E	ORPA	7.87	74.6	84.6	79.0	Y	Y	
IR03MWO-1	E	ORPA	11.92	3.7	18.7	NA	Y	N	
IR03MWO-2	E	ORPA	11.55	4.2	20.7	NA	Y	N	
IR03MWO-3	E	ORPA	9.22	5.1	20.1	NA	Y	N	
IR04MW09A	E	IR-04	9.34	4.5	19.5	NA	N	N	
IR04MW13A	E-2	ILA	12.55	7.1	22.1	17.0	Y	Y	
IR04MW31A	E-2	ILA	12.53	12.7	27.7	NA	Y	N	
IR04MW35A	E	IR-04	11.11	6.8	NA	NA	N	N	
IR04MW36A	E-2	ILA	9.84	5.6	NA	18.0	Y	Y	
IR04MW37A	E	IR-04	9.54	6.8	NA	16.5	Y	Y	
IR04MW38A	E	IR-04	9.76	5.4	NA	NA	Y	N	
IR04MW39A	E	IR-04	7.86	4.0	NA	NA	N	N	
IR04MW40A	E	IR-04	7.16	4.3	NA	NA	Y	N	
IR04P31AA	E	ILA	11.89	9.9	NA	NA	N	N	
IR04P31AB	E	ILA	12.14	11.2	NA	NA	N	N	
IR04P38A	E	IR-04	9.81	7.4	NA	NA	N	N	
IR05MW73A	E	IR-05	6.59	5.1	10.1	NA	Y	N	
IR05MW74A	E	IR-05	7.40	5.8	22.8	NA	N	N	
IR05MW76A	E	IR-05	4.97	3.0	12.0	NA	Y	N	
IR05MW77A	E	IR-05	10.43	8.4	34.2	NA	N	N	
IR05MW82A	E	IR-05	12.00	7.0	22.0	NA	Y	N	
IR05MW85A	E	IR-05	9.80	7.9	22.9	17.0	Y	Y	
IR05P77AA	E	IR-05	10.04	9.0	36.0	NA	N	N	
IR05P77AB	E	IR-05	9.62	5.7	35.7	NA	N	N	
IR06MW22A	C	RU-C5	10.00	4.6	9.6	NA	Y	N	
IR06MW22AD	C	RU-C5	10.08	3.4	8.4	NA	N	N	decommissioned
IR06MW23A	C	RU-C5	9.77	4.3	12.3	NA	N	N	decommissioned
IR06MW27A	C	RU-C5	11.75	4.1	10.8	NA	N	N	decommissioned
IR06MW30A	C	RU-C5	9.87	6.4	16.4	NA	N	N	decommissioned
IR06MW32A	C	RU-C5	9.90	4.6	14.6	10.5	Y	Y	
IR06MW32AD	C	RU-C5	10.02	5.9	13.4	NA	N	N	decommissioned
IR06MW34A	C	IR-06	10.37	6.3	11.3	NA	Y	N	
IR06MW35A	C	RU-C5	9.73	5.4	14.4	10.0	Y	Y	
IR06MW40A	C	RU-C5	10.08	6.4	19.9	14.0	Y	Y	

Table 1-1. Monitoring well construction details.

Well ID	Parcel	Area of Concern	Current Top of Casing (ft MSL)	TOS depth (ft below TOC)	BOS depth (ft below TOC)	Dedicated Pump Intake (ft below TOC)	SAP required DTW?	SAP required sampling?	comments
IR06MW41A	C	RU-C5	9.78	6.4	16.4	NA	Y	N	
IR06MW42A	C+	IR-06	11.89	8.0	13.0	12.5	Y	Y	
IR06MW44A	C	RU-C5	9.81	4.5	14.5	NA	Y	N	
IR06MW45A	C+	RU-C5	9.89	3.3	13.3	NA	N1	N	decommissioned
IR06MW46A	B	IR-06	9.46	6.4	16.4	NA	Y	N	
IR06MW47F	C	RU-C5	9.66	29.5	39.5	36.0	Y	Y	
IR06MW48F	C	RU-C5	10.03	9.4	19.4	NA	N	N	decommissioned
IR06MW49F	C	IR-06	11.49	8.6	18.6	NA	Y	N	
IR06MW50F	C	IR-06	10.38	19.1	29.1	NA	N1	N1	decommissioned
IR06MW51F	C	RU-C5	10.19	26.4	36.4	NA	N	N	decommissioned
IR06MW52F	C	RU-C5	9.70	18.3	28.3	23.5	Y	Y	
IR06MW53F	C	RU-C5	10.51	13.6	23.6	18.0	N	Y	
IR06MW54F	C	RU-C5	35.02	41.2	51.2	46.0	Y	Y	
IR06MW55F	C	RU-C5	32.34	35.4	45.4	40.5	Y	Y	
IR06MW56F	C	IR-06	25.04	32.5	42.5	NA	Y	N	
IR06MW57F	C	IR-06	28.02	29.4	39.9	NA	Y	N	
IR06MW58F	C	IR-06	25.91	27.4	37.4	NA	N1	N	decommissioned
IR06MW59A1	C	RU-C5	9.13	4.3	9.3	8.0	Y	Y	
IR06MW59A2	C	RU-C5	9.15	19.5	29.5	24.5	N	Y	
IR06MW60A	C	IR-06	10.59	3.8	13.8	9.0	Y1	Y1	
IR06P30A	C	IR-06	10.12	6.8	16.8	NA	N	N	
IR06P54FA	A	IR-06	35.48	41.5	51.5	NA	N	N	
IR06P54FB	C	IR-06	34.96	41.4	51.4	NA	N	N	
IR07MW19A	B	IR-07	9.56	5.4	15.4	12.5	Y	Y	
IR07MW20A1	B	IR-07	9.26	5.2	23.2	16.5	Y	Y	
IR07MW20A2	B	IR-07	9.27	38.0	43.0	NA	N	N	decommissioned
IR07MW21A1	B	IR-07	13.89	5.9	15.9	16.9	N	Y	
IR07MW21A2	B	IR-07	14.42	30.5	35.5	NA	N	N	decommissioned
IR07MW23A	B	IR-07	15.76	6.4	16.4	16.0	Y	Y	
IR07MW24A	B	IR-07	16.26	5.0	15.0	15.1	Y	Y	
IR07MW25A	B	IR-07	12.67	8.0	18.0	16.4	Y	Y	
IR07MW26A	B	IR-07	14.50	5.0	15.0	15.6	Y	Y	
IR07MW27A	B	IR-07	16.15	10.7	20.7	16.0	Y	Y	
IR07MW28A	NNP	IR-07	12.03	7.9	17.9	13.8	Y	Y	

Table 1-1. Monitoring well construction details.

Well ID	Parcel	Area of Concern	Current Top of Casing (ft MSL)	TOS depth (ft below TOC)	BOS depth (ft below TOC)	Dedicated Pump Intake (ft below TOC)	SAP required DTW?	SAP required sampling?	comments
IR07MW93A	B	IR-07	19.53	18.9	28.9	NA	Y	N	
IR07MW94A	B	IR-07	15.15	14.0	24.0	NA	Y	N	
IR07MW95A	NNP	IR-07	16.60	13.7	23.7	NA	Y	N	
IR07MWP-1	B	IR-07	9.87	4.0	19.0	NA	N	N	decommissioned
IR07MWP-2	B	IR-07	9.77	3.7	18.7	NA	N	N	decommissioned
IR07MWS-1	B	IR-07	10.25	4.6	17.6	NA	N	N	decommissioned
IR07MWS-2	B	IR-07	12.71	8.1	18.1	13.9	Y	Y	
IR07MWS-2D	B	IR-07	9.13	2.5	17.5	NA	N	N	decommissioned
IR07MWS-3	B	IR-07	9.75	4.4	19.4	NA	N	N	decommissioned
IR07MWS-4	B	IR-07	16.78	6.0	16.0	17.5	Y	Y	
IR07MWS-4D	B	IR-07	13.22	6.0	21.0	NA	N	N	decommissioned
IR07P20A	B	IR-07	9.57	4.3	24.3	NA	N	N	
IR08MW37A	E	IR-08	4.25	6.8	21.8	NA	N	N	
IR08MW38A	E	IR-08	6.82	6.1	24.1	NA	Y	N	
IR08MW39A	D	IR-08	5.05	5.6	35.6	NA	N	N	decommissioned
IR08MW40A	E	IR-08	5.41	7.4	27.4	NA	Y	N	
IR08MW41A	E	IR-08	6.34	4.9	24.9	NA	N	N	
IR08MW42A	E	IR-08	4.15	9.9	19.9	NA	N	N	decommissioned
IR08MW43A	D	IR-08	8.82	6.2	21.2	NA	N	N	decommissioned
IR08MW44A	E	IR-08	5.94	5.6	20.6	NA	Y	N	
IR08MWW-6	D	IR-08	4.88	9.6	19.6	NA	Y	N	
IR08P39A	D	IR-08	4.91	5.6	35.6	NA	N	N	
IR09MW31A	D	IR-09	8.42	6.4	11.4	NA	Y	N	
IR09MW35A	D	IR-09	8.71	7.3	18.3	13.5	Y	Y	
IR09MW36A	D	IR-09	8.87	10.5	20.5	15.0	Y	Y	
IR09MW37A	D	IR-09	9.15	7.0	13.5	12.0	Y	Y	
IR09MW38A	D	IR-09	9.02	7.0	12.0	11.0	Y	Y	
IR09MW39A	D	IR-09	8.18	12.4	22.4	18.0	Y	Y	
IR09MW44A	D	IR-09	8.78	7.0	17.0	12.5	Y	Y	
IR09MW45F	D	IR-09	8.46	6.6	16.6	12.5	Y	Y	
IR09MW51F	D	IR-09	8.64	5.7	20.7	14.5	Y	Y	
IR09MW52A	D	IR-09	9.59	5.5	20.5	15.0	Y	Y	
IR09MW54B	D	IR-09	9.26	24.8	28.8	NA	Y	N	
IR09MW55B	D	IR-09	9.07	34.8	43.8	NA	Y	N	

Table 1-1. Monitoring well construction details.

Well ID	Parcel	Area of Concern	Current Top of Casing (ft MSL)	TOS depth (ft below TOC)	BOS depth (ft below TOC)	Dedicated Pump Intake (ft below TOC)	SAP required DTW?	SAP required sampling?	comments
IR09MW61A	D	IR-09	8.49	10.1	20.1	14.5	Y	Y	
IR09MW62A	D	IR-09	8.50	9.7	19.7	14.5	Y	Y	
IR09MW63A	D	IR-09	8.66	9.7	19.7	14.5	Y	Y	
IR09P040A	D	IR-09	9.05	10.4	15.4	12.5	N	Y	
IR09P041A	D	IR-09	8.86	11.4	16.4	NA	N	N	
IR09P042A	D	IR-09	8.91	34.5	39.5	NA	N	N	
IR09P043A	D	IR-09	8.96	9.6	14.6	NA	N	N	
IR09P35AA	D	IR-09	8.75	4.3	24.3	NA	N	N	
IR09P35AB	D	IR-09	8.76	4.4	24.4	NA	N	N	
IR09PPYI	D	IR-09	8.78	6.7	11.7	10.5	N	Y	
IR10MW12A	B	IR-10	9.08	2.3	17.3	NA	N1	N1	decommissioned
IR10MW13A1	B	IR-10	9.92	4.6	19.6	13.0	Y	Y	
IR10MW13A2	B	IR-10	9.96	24.7	39.7	NA	N	N	
IR10MW14A	B	IR-10	10.23	4.6	19.6	13.5	Y	Y	
IR10MW15A	B	IR-10	9.70	4.6	17.6	NA	N	N	decommissioned
IR10MW28A	B	IR-10	13.57	6.4	16.4	NA	N2	N2	
IR10MW29A1	B	IR-10	9.15	4.3	14.3	NA	Y	N	
IR10MW29A2	B	IR-10	9.04	48.0	58.0	NA	N	N	
IR10MW31A1	B	IR-10	10.34	6.8	16.8	13.5	Y	Y	
IR10MW31A1D	B	IR-10	9.86	4.3	19.3	NA	N	N	decommissioned
IR10MW31A2	B	IR-10	9.96	24.4	39.4	NA	N	N	decommissioned
IR10MW32A	B	IR-10	9.77	5.7	20.7	14.0	Y	N	
IR10MW33A	B	IR-10	10.17	5.1	15.1	10.5	Y	Y	
IR10MW59A	B	IR-10	13.79	8.1	17.1	14.5	Y	Y	
IR10MW60A	B	IR-10	10.24	11.0	21.0	NA	N	N	
IR10MW61A	B	IR-10	10.05	10.9	20.9	15.5	Y	Y	
IR10MW62A	B	IR-10	9.53	11.0	21.0	15.5	N	Y	
IR10MW63A	B	IR-10	9.62	10.0	20.0	NA	N	N	
IR10MW64A	B	IR-10	9.55	10.9	20.9	NA	N	N	
IR10MW65A	B	IR-10	13.62	15.0	25.0	NA	N	N	
IR10MW66A	B	IR-10	13.67	15.0	25.0	NA	N	N	
IR10MW67A	B	IR-10	14.04	14.5	24.5	NA	N	N	
IR10MW68A	B	IR-10	13.84	14.5	24.5	NA	N	N	
IR10MW69A	B	IR-10	13.91	15.0	25.0	NA	N	N	

Table 1-1. Monitoring well construction details.

Well ID	Parcel	Area of Concern	Current Top of Casing (ft MSL)	TOS depth (ft below TOC)	BOS depth (ft below TOC)	Dedicated Pump Intake (ft below TOC)	SAP required DTW?	SAP required sampling?	comments
IR10MW70A	B	IR-10	14.15	14.0	24.0	NA	N	N	
IR10MW71A	B	IR-10	13.87	14.0	24.0	19.0	N	Y	
IR10MW72A	B	IR-10	14.12	14.3	24.3	NA	N	N	
IR10MW73A	B	IR-10	13.46	15.0	25.0	NA	N	N	
IR10MW74A	B	IR-10	13.77	31.6	36.6	NA	N	N	
IR10MW76A	B	IR-10	13.83	8.0	18.0	15.0	N	Y	
IR10MW77A	B	IR-10	13.68	15.0	25.0	NA	N	N	
IR10MW78A	B	IR-10	13.76	14.5	24.7	NA	N	N	
IR10MW79A	B	IR-10	10.11	10.9	20.9	16.0	Y	Y	
IR10MW80A	B	IR-10	9.67	11.0	21.0	15.0	Y	Y	
IR10MW81A	B	IR-10	9.88	7.3	17.3	12.0	Y1	Y1	
IR10MW82A	B	IR-10	9.59	2.6	17.6	12.0	Y1	Y1	
IR10P13A	B	IR-10	9.83	4.4	19.4	NA	N	N	
IR10P13AA	B	IR-10	9.99	4.9	19.9	NA	N	N	
IR10P15A	B	IR-10	9.06	4.3	14.3	NA	N	N	decommissioned
IR11MW25A	E	IR-11	11.40	4.9	10.9	NA	N2	N2	
IR11MW26A	E	IR-11	9.33	5.7	9.7	NA	Y	N	
IR11MW27A	E	IR-11	9.88	4.9	9.9	10.5	N2	N2	
IR12MW11A	E-2	ILA	11.68	6.3	19.3	NA	N2	N	
IR12MW12A	E	ILA	8.40	3.3	16.3	NA	Y	N	
IR12MW13A	E	IR-12	12.52	7.0	22.0	17.0	Y	Y	
IR12MW14A	E	IR-12	9.23	4.5	19.5	16.5	Y	Y	
IR12MW15A	E	IR-12	7.28	4.2	19.2	NA	Y	N	
IR12MW16A	E	IR-12	8.57	5.3	15.3	NA	Y	N	
IR12MW17A	E	ILA	12.46	6.6	16.6	NA	N2	N2	
IR12MW18A	E	IR-12	12.37	11.7	21.7	NA	N	N	
IR12MW19A	E	ILA	13.02	8.1	23.1	NA	N	N	
IR12MW20A	E	IR-12	12.27	8.0	23.0	NA	Y	N	
IR12MW21A	E	IR-12	10.42	7.2	22.2	NPI	Y	Y	
IR12P12AA	E	ILA	9.81	5.0	20.0	NA	N	N	
IR12P12AB	E	ILA	10.09	5.0	20.0	NA	N	N	
IR12P14AA	E	IR-12	10.68	5.0	25.0	NA	N	N	
IR12P14AB	E	IR-12	10.43	6.3	26.3	NA	N	N	
IR13MW10A	E	IR-13	3.56	3.1	17.1	NA	N	N	

Table I-1. Monitoring well construction details.

Well ID	Parcel	Area of Concern	Current Top of Casing (ft MSL)	TOS depth (ft below TOC)	BOS depth (ft below TOC)	Dedicated Pump Intake (ft below TOC)	SAP required DTW?	SAP required sampling?	comments
IR13MW11A	E	IR-13	4.84	3.9	8.9	NA	N	N	
IR13MW12A	E	IR-13	4.12	4.4	17.4	NA	Y	N	
IR13MWB5A-W	E	IR-13	5.93	2.7	12.7	NA	Y	N	
IR13P12AA	E	IR-13	4.49	7.8	17.8	NA	N	N	
IR13P12AB	E	IR-13	4.53	4.8	19.8	NA	N	N	
IR14MW09A	E	IR-14	9.93	6.6	14.6	NA	Y	N	
IR14MW10A	E	ORPA	8.89	6.7	16.7	NA	Y	N	
IR14MW12A	E	IR-14	8.52	6.8	18.3	NA	Y	N	
IR14MW13A	E	IR-14	9.75	6.9	21.9	NA	N	N	
IR15MW06A	E	IR-15	11.11	8.0	21.0	16.0	Y	Y	
IR15MW07A	E	IR-15	11.18	6.8	19.8	NA	Y	N	
IR15MW08A	E	IR-15	11.70	7.0	22.0	NA	N	N	
IR15MW09F	E	IR-15	11.48	19.8	29.8	NA	N	N	
IR15MW10F	E	IR-15	10.98	19.9	29.9	25.5	Y	Y	
IR15P08AA	E	IR-15	11.65	6.5	21.5	NA	N	N	
IR15P08AB	E	IR-15	11.14	4.4	19.4	NA	N	N	
IR15P08B	E	IR-15	11.11	41.3	51.3	NA	N	N	
IR17MW11A	D	IR-17	7.85	3.6	16.6	NA	Y	N	
IR17MW12A	D	IR-17	7.72	3.7	16.5	NA	Y	N	
IR17MW13A	D	IR-17	6.98	3.6	16.6	NA	Y	N	
IR17P12AA	D	IR-17	9.59	6.2	21.2	NA	N	N	
IR17P12AB	D	IR-17	9.82	6.3	21.3	NA	N	N	
IR18MW100B	B	IR-18	17.94	39.7	44.7	NA	Y	N	
IR18MW101B	B	IR-18	18.89	36.9	41.9	NA	Y	N	
IR18MW200A	NNP	IR-18	26.96	19.6	34.6	NA	Y	N	
IR18MW21A	B	IR-18	17.56	9.8	19.8	17.0	Y	Y	
IR18MW21AD	B	IR-18	17.11	11.4	26.4	NA	N	N	decommissioned
IR18MW22A	B	IR-18	18.11	11.3	26.3	NA	N	N	decommissioned
IR18MW91A	NNP	IR-18	18.75	14.7	24.7	NA	Y	N	
IR18MW92A	B	IR-18	20.70	16.8	26.8	NA	Y	N	
IR18P21A1	B	IR-18	17.52	11.8	26.8	NA	N	N	decommissioned
IR18P21A2	B	IR-18	17.12	11.3	26.8	NA	N	N	decommissioned
IR20MW01A	B	IR-20	8.31	2.9	16.9	NA	N	N	decommissioned
IR20MW06A	B	IR-20	9.85	7.5	22.5	NA	N	N	decommissioned

Table I-1. Monitoring well construction details.

Well ID	Parcel	Area of Concern	Current Top of Casing (ft MSL)	TOS depth (ft below TOC)	BOS depth (ft below TOC)	Dedicated Pump Intake (ft below TOC)	SAP required DTW?	SAP required sampling?	comments
IR20MW11A	B	IR-20	10.52	5.6	18.6	NA	N	N	decommissioned
IR20MW17A	B	IR-20	10.51	6.7	21.7	15.0	Y	N	
IR22MW07A	D	IR-22	7.74	6.4	21.4	NA	Y	Y2	
IR22MW08A	D	IR-22	8.77	5.3	20.3	NA	Y	Y2	
IR22MW15A	D	IR-22	10.83	7.0	22.0	NA	Y	Y2	
IR22MW16A	D	IR-22	7.86	6.5	21.5	14.3	Y	Y	
IR22MW20A	D	IR-22	7.84	5.5	20.5	13.8	Y	Y	
IR22P15A1	D	IR-22	10.75	8.8	26.3	NA	N	Y2	
IR22P15A2	D	IR-22	11.00	8.0	23.0	NA	N	Y2	
IR23MW14A	B	IR-23	9.61	5.8	20.8	NA	N	N	decommissioned
IR24MW04A	B	IR-24	11.16	8.0	18.0	NA	N	N	decommissioned
IR24MW05A	B	IR-24	10.42	6.9	21.9	NA	N	N	
IR24MW06A	B	IR-24	10.25	4.7	19.7	14.5	Y	N	
IR24MW07A	B	IR-24	9.92	4.8	19.8	NA	N	N	
IR25EW01A	C	RU-C5	10.81	6.0	16.0	NA	Y	N	
IR25IW02A	C	RU-C5	10.73	11.0	15.3	NA	N	N	
IR25MW11A	C	RU-C5	10.45	4.4	19.4	NA	Y	N	
IR25MW15A1	C	RU-C5	7.84	3.7	13.7	NA	N	N	decommissioned
IR25MW15A2	C	RU-C5	7.38	20.2	30.2	NA	N	N	decommissioned
IR25MW15F	C	RU-C5	10.50	36.4	46.4	NA	N	N	
IR25MW16A	C	RU-C5	11.02	5.4	20.4	15.0	Y	Y	
IR25MW17A	C+	RU-C5	10.31	5.0	20.5	13.5	Y	Y	
IR25MW18A	C	RU-C5	10.46	10.7	15.7	NA	N1	N	decommissioned
IR25MW19A	C	RU-C5	10.51	10.8	15.8	NA	N	N	decommissioned
IR25MW20A	C	RU-C5	10.48	7.7	12.7	NA	N1	N	decommissioned
IR25MW22A	C	RU-C5	11.19	5.7	10.7	NA	N	N	decommissioned
IR25MW37A	C+	RU-C5	10.07	6.7	15.7	11.5	Y	Y	
IR25MW37B	C	RU-C5	10.21	19.8	22.8	NA	Y	N	
IR25MW38B	C	RU-C5	10.44	29.7	33.7	NA	Y	N	
IR25MW39A	C	RU-C5	11.21	6.7	13.7	NA	Y	N	
IR25MW39B	C	RU-C5	11.25	18.8	24.8	NA	Y	N	
IR25MW40A	C	RU-C5	9.72	9.8	19.8	11.0	N	Y	
IR25MW41A	C	RU-C5	10.08	21.1	26.1	NA	N	N1	decommissioned
IR25MW42B	C	RU-C5	10.01	24.3	27.8	NA	N2	N	decommissioned

Table 1-1. Monitoring well construction details.

Well ID	Parcel	Area of Concern	Current Top of Casing (ft MSL)	TOS depth (ft below TOC)	BOS depth (ft below TOC)	Dedicated Pump Intake (ft below TOC)	SAP required DTW?	SAP required sampling?	comments
IR25MW50A	C	IR-25	10.02	4.5	11.5	NA	Y	N	
IR25MW51A	C	RU-C5	10.47	19.9	29.9	NA	N	N	decommissioned
IR25MW52A	C	RU-C5	10.06	4.8	13.7	NA	N	N1	decommissioned
IR25MW53A	C	RU-C5	11.07	11.0	15.5	NA	Y	N	
IR25MW54A	C	RU-C5	11.12	11.0	15.3	NA	Y	N	
IR25MW55A	C	RU-C5	10.39	7.5	16.8	NA	Y	N	
IR25MW56A	C	IR-25	11.10	25.0	29.3	NA	N	N	
IR25MW57A	C	IR-25	9.21	11.0	15.3	NA	N	N	
IR25MW60A1	C	RU-C5	9.57	13.6	23.6	15.0	N2	N2	
IR25MW60A2	C	RU-C5	9.48	29.6	39.6	NA	N1	N1	decommissioned
IR25MW61A1	B+	RU-C5	9.56	17.8	27.8	23.0	Y	Y	
IR25MW61A2	B+	RU-C5	9.67	27.8	32.8	30.5	Y	Y	
IR25MW900B	C	RU-C5	11.02	18.6	27.6	NA	Y	N	
IR25MW901B	C	RU-C5	10.98	18.6	27.6	NA	Y	N	
IR25MW902B	C	RU-C5	11.02	17.6	27.6	NA	Y	N	
IR25MW903B	C	RU-C5	10.48	23.7	28.7	NA	N	N	decommissioned
IR25MW904B	C	RU-C5	10.43	21.7	27.2	NA	N	N	
IR25MW905B	C	RU-C5	7.63	10.2	17.2	NA	N	N	decommissioned
IR26MW36A	B	IR-26	8.28	6.2	18.2	NA	N	N	decommissioned
IR26MW40A	B	IR-26	9.89	5.4	25.4	NA	Y	N	
IR26MW41A	B	IR-26	10.15	5.6	20.6	13.1	Y	Y	
IR26MW42A	B	IR-26	8.18	5.4	20.4	NA	N	N	decommissioned
IR26MW43A	B	IR-26	7.09	5.3	15.3	NA	Y	N	
IR26MW44A	B	IR-26	8.25	5.4	12.4	NA	Y	N	
IR26MW45A	B	EE-05	8.28	6.3	16.3	NA	N	N	decommissioned
IR26MW46A	B	EE-05	8.08	6.5	16.5	13.0	Y	Y	
IR26MW47A	B	EE-05	7.75	4.6	14.6	11.4	Y	Y	
IR26MW48A	B	EE-05	8.13	8.8	18.8	13.8	Y	Y	
IR26MW49A	B	EE-05	7.99	4.3	14.3	11.4	Y1	Y1	
IR26MW50A	B	EE-05	7.42	3.9	13.9	10.3	Y1	Y1	
IR28IW901A	C	IR-28	8.71	9.7	14.7	NA	N	N	
IR28IW902A	C	RU-C1	8.62	9.6	19.6	NA	N	N	
IR28IW903A	C	IR-28	8.49	8.9	18.9	NA	N	N	
IR28IW938F	C	RU-C4	9.21	10.1	20.1	NA	N	N	

Table 1-1. Monitoring well construction details.

Well ID	Parcel	Area of Concern	Current Top of Casing (ft MSL)	TOS depth (ft below TOC)	BOS depth (ft below TOC)	Dedicated Pump Intake (ft below TOC)	SAP required DTW?	SAP required sampling?	comments
IR28IW939F	C	RU-C4	9.09	10.2	20.2	NA	N	N	
IR28IW940F	C	IR-28	9.02	10.0	20.0	NA	N	N	
IR28MW122A	C	RU-C1	7.48	5.6	21.1	14.7	Y	Y	
IR28MW123A	C	RU-C1	8.09	5.7	20.7	NA	Y	N	
IR28MW124A	C	RU-C1	7.14	4.6	20.1	NA	N	N	decommissioned
IR28MW124A-R1	C	IR-28	7.86	5.7	20.7	NA	N	N	
IR28MW125A	C	RU-C1	7.74	4.5	16.5	11.5	Y	Y	
IR28MW126A	C	RU-C1	7.76	4.8	20.3	NA	Y	N	
IR28MW127A	C	RU-C1	7.63	5.0	20.5	NA	Y	N	
IR28MW128A	C	RU-C1	8.11	4.8	16.8	NA	N	N	
IR28MW129A	C	RU-C1	8.83	5.4	20.9	NA	N	N	
IR28MW136A	C	RU-C1	7.55	4.5	15.0	10.5	Y	Y	
IR28MW140F	C	RU-C1	7.66	28.7	44.2	36.3	Y	Y	
IR28MW149A	C	RU-C1	8.92	5.3	20.8	NA	N	N	decommissioned
IR28MW149A-R1	C	IR-28	9.18	5.6	21.1	NA	N	N	
IR28MW150A	C	RU-C1	7.87	5.5	21.0	15.0	Y	Y	
IR28MW151A	C	RU-C1	8.57	5.5	21.0	14.0	Y	Y	
IR28MW155A	C	RU-C1	8.57	5.3	20.8	14.5	Y	Y	
IR28MW169A	C	RU-C1	9.69	5.5	21.0	14.5	Y	Y	
IR28MW170A	C	RU-C1	8.76	5.1	20.2	NA	Y	N	
IR28MW171A	C	RU-C1	6.67	5.5	21.0	14.0	Y	Y	
IR28MW171B	C	RU-C1	7.19	49.7	59.7	55.0	Y	Y	
IR28MW172F	C	RU-C2	8.57	56.1	66.1	61.0	Y	Y	
IR28MW173B	C	RU-C1	8.06	48.6	58.6	53.0	Y	Y	
IR28MW188F	C	IR-28	9.64	7.7	21.2	15.0	Y	Y	
IR28MW189F	C	RU-C2	8.87	6.9	16.9	12.0	Y	Y	
IR28MW190F	C	RU-C2	10.06	12.9	16.2	14.5	Y	Y	
IR28MW200A	C	RU-C4	8.28	5.0	15.5	11.5	Y	Y	
IR28MW201F	C	RU-C4	8.04	24.3	34.3	29.5	Y	Y	
IR28MW211F	C	RU-C4	8.90	5.4	15.9	11.5	N	Y	
IR28MW216F	C	RU-C2	8.38	17.3	27.8	22.5	Y	Y	
IR28MW217A	C	RU-C2	8.98	5.4	19.4	13.5	Y	Y	
IR28MW221A	C	RU-C2	9.56	9.2	19.2	14.5	Y	Y	
IR28MW221B	C	RU-C2	9.58	32.2	42.2	38.0	Y	Y	

Table I-1. Monitoring well construction details.

Well ID	Parcel	Area of Concern	Current Top of Casing (ft MSL)	TOS depth (ft below TOC)	BOS depth (ft below TOC)	Dedicated Pump Intake (ft below TOC)	SAP required DTW?	SAP required sampling?	comments
IR28MW255F	C	RU-C1	7.83	39.4	54.9	47.3	Y	Y	
IR28MW268A	C	RU-C1	7.90	5.4	20.4	13.3	Y	Y	
IR28MW269A	C	RU-C1	7.84	3.0	18.0	NA	N	N	decommissioned
IR28MW270A	C	RU-C1	7.61	5.3	20.3	13.7	N	Y	
IR28MW271A	C	IR-28	7.06	5.3	20.3	NA	Y	N	
IR28MW272A	C	RU-C4	7.85	5.9	10.9	8.5	Y	Y	
IR28MW272F	C	RU-C4	8.19	49.8	59.8	55.0	Y	Y	
IR28MW273F	C	RU-C4	9.01	5.4	20.4	NA	N	N	decommissioned
IR28MW275F	C	RU-C4	8.62	6.6	11.6	NA	N	N	
IR28MW286A	C	RU-C2	9.81	5.6	10.6	NA	Y	N	
IR28MW287A	C	RU-C2	9.31	4.5	9.5	8.5	Y	Y	
IR28MW290A	C	IR-28	8.14	5.6	20.6	NA	NI	N	decommissioned
IR28MW293A	C	IR-28	7.50	5.2	20.2	NA	N	N	
IR28MW294A	C	IR-28	7.78	5.4	20.4	13.5	N	Y	
IR28MW295A	C	IR-28	7.62	5.3	20.3	NA	N	N	
IR28MW297A	C	IR-28	7.68	5.3	20.3	NA	Y	N	
IR28MW298A	C	RU-C4	8.04	4.0	9.0	8.0	Y	Y	
IR28MW299B	C	RU-C2	9.60	5.7	20.7	14.0	Y	Y	
IR28MW300F	C	RU-C2	9.67	5.8	20.8	14.0	N	Y	
IR28MW308A	C	RU-C1	7.63	5.5	15.5	10.5	Y	Y	
IR28MW309B	C	RU-C1	9.06	39.0	54.0	44.0	Y	Y	
IR28MW310F	C	RU-C4	7.62	25.3	35.3	NA	Y	N	
IR28MW311A	C	RU-C4	8.02	3.7	18.7	NA	Y	Y	decommissioned see IR38MW311A-R1
IR28MW311A-R1	C	RU-C4	7.90	3.6	18.6	11.5	Y	N	replacement for IR28MW311A
IR28MW312F	C	RU-C4	8.45	8.7	18.7	13.5	N	Y	
IR28MW313F	C	IR-28	12.17	12.4	27.4	NA	Y	N	
IR28MW314B	C	RU-C1	8.68	19.7	24.7	NA	Y	N	
IR28MW315A	C	RU-C4	8.84	4.7	9.7	8.0	Y	Y	
IR28MW315B	C	RU-C4	9.03	21.9	31.9	27.0	Y	Y	
IR28MW315F	C	RU-C4	8.97	64.8	74.8	70.5	Y	Y	
IR28MW324A	C	RU-C1	8.79	7.8	12.8	NA	NI	N	decommissioned
IR28MW325A	C	RU-C1	8.83	7.8	12.8	NA	N	N	
IR28MW326A	C	RU-C1	8.75	7.7	12.7	NA	NI	N	decommissioned
IR28MW327A	C	RU-C1	8.73	7.7	12.7	NA	N	N	

Table 1-1. Monitoring well construction details.

Well ID	Parcel	Area of Concern	Current Top of Casing (ft MSL)	TOS depth (ft below TOC)	BOS depth (ft below TOC)	Dedicated Pump Intake (ft below TOC)	SAP required DTW?	SAP required sampling?	comments
IR28MW328A	C	RU-C1	8.04	7.7	12.7	NA	N	N	
IR28MW329A	C	RU-C1	7.78	7.6	12.6	NA	N	N	
IR28MW330A	C	RU-C1	8.78	7.8	12.8	NA	N	N	
IR28MW331A	C	RU-C1	7.97	7.6	12.6	NA	N	N	
IR28MW333A	C	RU-C1	8.71	7.7	12.7	NA	NI	N	decommissioned
IR28MW334A	C	RU-C1	8.78	7.8	12.8	NA	Y	N	
IR28MW335A	C	RU-C1	8.87	7.8	12.8	NA	N	N	
IR28MW336A	C	RU-C1	8.55	7.6	12.6	NA	N	N	
IR28MW337A	C	RU-C1	8.77	7.7	12.7	NA	N	N	
IR28MW338A	C	RU-C1	8.83	7.8	12.8	NA	Y	N	
IR28MW339A	C	RU-C1	8.47	7.7	12.7	NA	Y	N	
IR28MW340A	C	RU-C1	8.65	7.8	12.8	NA	Y	N	
IR28MW341F	C	RU-C4	9.20	13.3	16.8	NA	N	N	
IR28MW342F	C	RU-C4	8.86	7.6	14.6	NA	Y	N	
IR28MW350F	C	RU-C4	9.83	19.3	28.6	25.0	Y	Y	
IR28MW351F	C	RU-C4	9.00	50.9	58.9	NA	Y	N	
IR28MW352A	C	RU-C4	8.05	6.6	10.9	9.5	Y	Y	
IR28MW353A	C	RU-C1	8.19	5.6	19.6	13.5	Y	Y	
IR28MW353B	C	RU-C1	7.33	42.7	52.7	47.0	Y	Y	
IR28MW354A	C	RU-C1	8.32	6.0	15.0	NA	N	N	
IR28MW354B	C	IR-28	8.19	25.6	30.6	NA	Y	N	
IR28MW355F	C	RU-C4	9.03	10.3	19.5	14.5	N	Y	
IR28MW356F	C	RU-C4	9.00	10.3	19.5	NA	N	N	
IR28MW357F	C	RU-C4	8.62	10.1	19.2	NA	N	N	
IR28MW358F	C	RU-C4	8.73	10.2	19.4	NA	N	N	
IR28MW359F	C	RU-C4	8.64	10.1	19.2	NA	N	N	
IR28MW360F	C	RU-C4	8.57	10.0	19.1	NA	N	N	
IR28MW361F	C	RU-C4	8.80	10.1	19.3	NA	N	N	
IR28MW362F	C	RU-C4	9.08	9.8	19.8	NA	N	N	
IR28MW393F	C	RU-C4	7.33	55.6	58.4	NA	N	N	
IR28MW394A	C	IR-28	9.06	4.5	10.5	9.0	Y	Y	
IR28MW394B	C	IR-28	9.02	44.6	54.1	49.0	Y	Y	
IR28MW395F	C	RU-C2	9.12	47.2	51.2	49.5	Y	Y	
IR28MW396A	C	RU-C2	8.99	4.7	11.2	9.0	Y	Y	

Table 1-1. Monitoring well construction details.

Well ID	Parcel	Area of Concern	Current Top of Casing (ft MSL)	TOS depth (ft below TOC)	BOS depth (ft below TOC)	Dedicated Pump Intake (ft below TOC)	SAP required DTW?	SAP required sampling?	comments
IR28MW396B	C	RU-C2	9.09	32.3	41.8	37.5	Y	Y	
IR28MW397A	C	RU-C2	9.13	2.6	7.6	NA	Y	N	
IR28MW397B	C	RU-C2	9.37	33.2	36.7	35.5	Y	Y	
IR28MW398A	C	RU-C2	8.94	4.4	8.4	8.5	Y	Y	
IR28MW398B	C	RU-C2	8.92	38.0	42.5	41.5	Y	Y	
IR28MW399B	C	RU-C1	7.82	36.2	40.2	38.5	Y	Y	
IR28MW400B	C	RU-C1	8.88	24.8	27.8	NA	Y	N	
IR28MW401B	C	RU-C1	8.58	56.8	60.6	NA	Y	N	
IR28MW402F	C	RU-C4	7.45	40.3	42.3	NA	N	N	
IR28MW403A	C	RU-C4	8.82	14.5	24.5	NA	N	N	
IR28MW404A	C	RU-C4	8.73	15.0	25.0	NA	N	N	
IR28MW405A	C	RU-C4	8.70	15.0	25.0	NA	N	N	
IR28MW406	C	RU-C4	8.59	15.0	25.0	18.0	N	Y	
IR28MW407	C	RU-C4	8.36	14.0	24.0	18.5	N	Y	
IR28MW408A	C	RU-C4	8.18	53.5	58.5	NA	N	N	
IR28MW409A	C	RU-C4	8.80	15.0	25.0	NA	N	N	
IR28MW410A	C	IR-28	9.38	14.5	19.5	NA	N	N	
IR28MW411A	C	IR-28	8.47	17.5	22.5	NA	N	N	
IR28MW412A	C	IR-28	7.50	7.0	12.0	NA	N	N	
IR28MW413B	C	IR-28	9.99	15.0	20.0	NA	N	N	
IR28MW414B	C	IR-28	8.95	20.0	30.0	NA	N	N	
IR28MW415F	C	IR-28	8.52	15.5	25.5	NA	N	N	
IR28MW909A	C	RU-C2	8.89	6.7	15.7	NA	N	N	
IR28MW910A	C	RU-C2	8.93	18.8	24.8	NA	Y	N	
IR28MW911A	C	RU-C2	8.94	6.8	14.8	NA	N	N	
IR28MW912A	C	RU-C2	8.85	17.6	24.6	NA	N	N	
IR28MW913A	C	RU-C2	8.99	17.7	19.7	NA	N	N	
IR28MW914A	C	RU-C2	9.45	9.8	16.8	NA	Y	N	
IR28MW916A	C	RU-C1	8.80	9.6	18.6	NA	N	N	
IR28MW918A	C	RU-C1	8.81	23.7	32.2	NA	N	N	
IR28MW919A	C	RU-C1	8.63	9.6	19.6	NA	N	N	
IR28MW920A	C	RU-C1	8.62	9.6	17.4	NA	N	N	
IR28MW921A	C	RU-C1	8.67	9.7	19.7	NA	N	N	
IR28MW930A	C	RU-C1	8.70	9.7	18.7	NA	N	N	

Table 1-1. Monitoring well construction details.

Well ID	Parcel	Area of Concern	Current Top of Casing (ft MSL)	TOS depth (ft below TOC)	BOS depth (ft below TOC)	Dedicated Pump Intake (ft below TOC)	SAP required DTW?	SAP required sampling?	comments
IR28MW932F	C	RU-C4	8.87	26.6	29.6	NA	Y	N	
IR28MW933F	C	RU-C4	9.02	9.1	29.6	NA	N2	N	
IR28MW934F	C	RU-C4	9.05	9.2	29.7	NA	N2	N	
IR28MW935F	C	RU-C4	9.06	9.6	19.6	NA	N	N	
IR28MW936F	C	RU-C4	9.19	9.7	19.7	NA	N	N	
IR28MW937F	C	RU-C4	8.96	9.5	19.5	NA	N	N	
IR28P155AA	C	RU-C1	8.34	5.6	20.6	NA	N	N	
IR28P155AB	C	RU-C1	9.13	5.5	20.5	NA	N	N	
IR28P50AA	C	RU-C1	8.16	4.3	17.3	NA	N	N	
IR28P50AB	C	RU-C1	8.63	4.6	19.6	NA	N	N	
IR29MW48A	C	IR-29	8.04	3.8	9.3	NA	Y	N	
IR29MW56F	C	IR-29	8.15	5.5	14.5	11.0	N	Y	
IR29MW57A	C	IR-29	7.67	4.5	10.5	NA	N1	N	decommissioned
IR29MW58F	C	IR-29	8.54	14.6	18.6	16.0	Y	Y	
IR29MW59F	C	IR-29	8.21	14.7	24.7	19.7	N	Y	
IR29MW72F	C	IR-29	9.27	5.6	25.6	15.5	N	Y	
IR29MW84A	C	IR-29	8.09	5.3	10.3	NA	Y	N	
IR29MW85F	C	IR-29	9.66	6.0	21.0	13.0	Y	Y	
IR30MW01F	C	IR-30	8.92	5.0	18.9	NA	Y	N	
IR30MW02F	C	IR-30	9.77	5.3	19.2	NA	N	N	
IR30MW03F	C	IR-30	8.89	5.2	19.1	NA	Y	N	
IR30MW04F	C	IR-30	8.96	5.2	19.1	12.5	Y	Y	
IR33MW116A	D	IR-33	8.38	5.7	20.7	NA	Y	N	
IR33MW120B	D	IR-33	9.45	66.9	70.9	NA	Y	N	
IR33MW121B	D	IR-33	7.20	68.6	72.6	NA	Y	N	
IR33MW61A	D	IR-33	12.26	6.0	20.5	NA	N1	N1	decommissioned
IR33MW62A	D	IR-33	8.21	5.0	15.0	NA	N2	N	decommissioned
IR33MW63A	D	IR-33	7.80	5.4	20.4	NA	Y	N	
IR33MW64A	D	IR-33	9.30	7.0	13.0	NA	Y	N	
IR33MW65A	D	IR-33	8.32	5.5	15.5	NA	Y	N	
IR33MW66A	D	IR-33	8.91	5.3	20.3	NA	Y	N	
IR34MW01A	D	IR-34	8.62	5.1	15.1	NA	Y	N	
IR34MW02A	D	IR-34	8.03	5.5	20.5	NA	Y	N	
IR34MW35A	D	IR-34	8.15	5.1	20.1	NA	N	N	

Table 1-1. Monitoring well construction details.

Well ID	Parcel	Area of Concern	Current Top of Casing (ft MSL)	TOS depth (ft below TOC)	BOS depth (ft below TOC)	Dedicated Pump Intake (ft below TOC)	SAP required DTW?	SAP required sampling?	comments
IR34MW36A	D	IR-34	8.80	8.3	17.3	13.0	Y1	Y1	
IR34MW36B	D	IR-34	9.23	23.8	32.8	NA	Y	N	
IR34MW37A	D	IR-34	8.78	5.7	19.7	NA	Y	N	
IR34MW37B	D	IR-34	8.60	29.7	33.7	NA	Y	N	
IR35MW01A	D	IR-35	8.85	5.1	20.1	NA	Y	N	
IR36MW09A	E	IR-36	5.00	5.0	20.0	13.0	Y1	Y1	
IR36MW11A	E	NBFA	8.55	5.5	20.5	15.0	Y	Y	
IR36MW120B	E	IR-36	7.05	57.2	72.2	NPI	Y	Y	
IR36MW121A	E	IR-36	6.96	14.4	29.4	NPI	Y	Y	
IR36MW122A	E	IR-36	7.64	16.9	31.9	24.5	Y	Y	
IR36MW123B	E	IR-36	7.55	49.3	64.3	57.0	Y	Y	
IR36MW125A	E	IR-36	6.55	3.9	8.9	7.5	N2	N2	
IR36MW126A	E	IR-36	5.16	3.3	8.3	NA	N1	N1	
IR36MW127A	E	IR-36	6.45	5.5	25.5	16.5	Y	Y	
IR36MW128A	E	IR-36	8.01	5.6	20.6	15.0	Y	Y	
IR36MW129B	E	IR-36	7.80	53.7	68.7	59.5	Y	Y	
IR36MW12A	E	NBFA	7.18	5.2	20.2	14.0	Y	Y	
IR36MW135A	E	NBFA	7.85	5.4	25.4	NA	Y	N	
IR36MW137A	E	IR-36	7.76	4.9	6.4	NA	N2	N	
IR36MW139A	E	IR-36	7.10	3.8	18.8	NA	N	N	
IR36MW13A	E	IR-36	8.96	8.2	13.2	NA	N	N	
IR36MW14A	E	IR-36	5.52	5.4	15.4	10.5	Y1	Y1	
IR36MW15A	E	IR-36	7.04	5.5	20.5	NA	Y	N	
IR36MW16A	D	IR-36	8.26	5.3	25.3	16.0	Y	Y	
IR36MW17A	E	IR-36	8.36	5.5	20.5	15.0	Y	Y	
IR37MW01A	D	IR-37	7.59	5.4	20.4	NA	Y	N	
IR37MW26B	D	IR-37	8.14	29.8	34.8	NA	Y	N	
IR38MW01A	E	IR-38	4.28	13.1	33.1	NA	Y	N	
IR38MW02A	E	IR-38	2.88	9.6	29.6	NA	Y	N	
IR38MW03A	E	IR-38	4.00	5.4	20.4	NA	Y	N	
IR39MW21A	E	IR-39	7.92	8.0	15.0	NPI	Y	Y	
IR39MW22A	E	IR-39	6.34	4.9	19.9	NA	Y	N	
IR39MW23A	E	IR-39	5.61	5.2	20.2	11.5	Y	Y	
IR39MW24A	E	IR-39	4.80	4.9	14.9	NA	Y	N	

Table I-1. Monitoring well construction details.

Well ID	Parcel	Area of Concern	Current Top of Casing (ft MSL)	TOS depth (ft below TOC)	BOS depth (ft below TOC)	Dedicated Pump Intake (ft below TOC)	SAP required DTW?	SAP required sampling?	comments
IR39MW33A	E	IR-39	4.31	5.3	23.3	11.5	Y	Y	
IR39MW35A	E	IR-39	5.56	5.5	25.5	NA	N	N	
IR39MW36A	E	IR-39	4.66	5.4	25.4	15.5	Y	Y	
IR44MW08A	D	IR-44	7.24	4.6	14.6	10.5	Y	Y	
IR46MW37A	B	IR-46	9.58	5.0	20.0	14.0	Y	Y	
IR46MW38A	B	IR-46	9.78	5.4	20.4	NA	Y	N	
IR46MW39A	B	IR-46	9.75	5.6	20.6	NA	Y	N	
IR46MW39A2	B	IR-46	9.32	25.3	30.3	NA	N	N	
IR46MW39A3	B	IR-46	9.47	35.4	40.4	NA	N	N	
IR46MW40A	B	IR-46	9.29	4.7	20.2	NA	N	N	decommissioned
IR46MW40A2	B	IR-46	9.33	25.3	30.3	NA	N	N	decommissioned
IR46MW40A3	B	IR-46	9.28	35.3	40.3	NA	N	N	
IR46MW41A	B	IR-46	9.57	5.3	20.3	NA	Y	N	
IR46MW42A	B	IR-46	9.53	5.3	20.3	NA	N	N	decommissioned
IR46MW43A	B	IR-46	8.98	5.2	20.2	NA	Y	N	
IR46MW46A	B	IR-46	9.61	5.4	20.4	NA	Y	N	
IR46MW47A	B	IR-46	9.69	5.6	20.6	NA	Y	N	
IR46MW48A	B	IR-46	8.89	5.5	20.5	NA	Y	N	
IR46P38AA	B	IR-46	10.68	6.6	31.6	NA	N	N	
IR46P38AB	B	IR-46	10.75	6.2	21.2	NA	N	N	
IR50MW13F	C	IR-50	7.68	5.5	15.5	NA	Y	N	
IR50MW14A	D	IR-50	6.86	5.6	20.9	NA	N	N	
IR50MW15A	D	IR-50	6.60	4.5	19.5	NA	Y	N	
IR55MW01A	D	IR-55	5.14	3.8	13.8	NA	Y	N	
IR55MW02A	D	IR-55	7.27	5.5	20.5	NA	Y	N	
IR55MW04A	D	IR-55	4.80	5.5	20.5	NA	Y	N	
IR56MW39A	E	IR-56	9.84	5.5	20.5	15.0	N	Y	
IR57MW30A	C	IR-57	8.02	5.3	20.3	NA	N	N	
IR58MW24F	C	IR-58	15.48	14.5	25.0	NA	Y	N	
IR58MW25F	C	RU-C2	9.72	16.2	26.7	21.5	Y	Y	
IR58MW26A	C	RU-C2	8.24	5.4	20.9	21.5	Y	Y	
IR58MW31A	C	RU-C2	8.97	4.4	14.9	10.0	Y	Y	
IR58MW31F	C	RU-C2	9.22	54.3	58.8	57.0	Y	Y	
IR58MW32B	C	RU-C2	8.77	9.1	24.1	17.0	Y	Y	

Table 1-1. Monitoring well construction details.

Well ID	Parcel	Area of Concern	Current Top of Casing (ft MSL)	TOS depth (ft below TOC)	BOS depth (ft below TOC)	Dedicated Pump Intake (ft below TOC)	SAP required DTW?	SAP required sampling?	comments
IR58MW33B	C	RU-C2	9.06	17.8	24.8	20.0	Y	Y	
IR58MW34A	C	RU-C2	9.80	14.7	24.7	NA	N	N	
IR58MW35A	C	RU-C2	9.55	4.8	24.8	NA	N	N	
IR59MW01F	A	IR-59	121.36	62.4	81.9	NA	N	N	decommissioned
IR59MW02F	A	IR-59	124.34	45.3	65.3	NA	N	N	decommissioned
IR59MW03F	A	IR-59	124.14	86.4	106.4	NA	N	N	decommissioned
IR59MW04F	A	IR-59	120.37	63.4	83.4	NA	N	N	decommissioned
IR59MW05F	A	IR-59	120.75	47.1	67.1	NA	N	N	decommissioned
IR59MW06F	A	IR-59	31.88	13.8	18.8	NA	N	N	decommissioned
IR60MW04A	B	IR-60	9.34	5.7	20.7	NA	N	N	decommissioned
IR60MW08A	B	IR-60	9.40	5.8	20.8	NA	N	N	decommissioned
IR60MW10A	B	IR-60	9.11	5.3	20.3	NA	N	N	decommissioned
IR61MW04A	B	IR-61	10.35	5.8	20.8	NA	N	N	
IR61MW05A	B	IR-61	10.11	5.4	20.4	14.0	Y	Y	
IR62MW07A	B	IR-62	10.20	6.2	21.2	NA	Y	N	
IR62MW08A	B	IR-62	10.35	5.5	15.5	NA	Y	N	
IR64MW05A	C	IR-64	7.83	4.6	9.6	7.7	Y	Y	
IR67MW04A	D	IR-67	8.17	5.4	20.4	NA	Y	N	
IR70MW04A	D	IR-70	7.32	5.7	20.7	13.5	Y	Y	
IR70MW07A	D	IR-70	7.90	4.5	19.5	13.0	N	Y	
IR70MW11A	D	IR-70	6.07	2.7	17.7	NA	Y	N	
IR70MW12A	D	IR-70	8.44	5.5	20.5	NA	Y	N	
IR71MW03A	D	IR-71	8.31	5.7	20.7	14.5	Y	Y	
IR71MW04A	D	IR-71	7.70	8.3	18.3	14.5	Y	Y	
IR71MW12B	D	IR-71	8.23	90.7	99.7	98.0	Y	Y	
IR72MW32A	E	IR-72	10.08	5.3	20.3	NA	Y	N	
IR72MW33A	E	ILA	12.00	5.5	20.5	NA	Y	N	
IR72P33AA	E	ILA	12.07	5.5	20.5	NA	N	N	
IR72P33AB	E	ILA	12.35	5.7	20.7	NA	N	N	
IR73MW04A	E	IR-73	13.48	5.4	20.4	NA	Y	N	
IR74MW01A	E	IR-74	13.16	9.9	14.9	14.0	Y	Y	
IR75MW05B	NNP	ILA	15.57	10.6	20.6	15.5	Y	Y	
IR75P05AA	E	ILA	15.34	10.3	20.3	NA	N	N	
IR75P05AB	E	ILA	15.52	10.6	20.6	NA	N	N	

Table 1-1. Monitoring well construction details.

Well ID	Parcel	Area of Concern	Current Top of Casing (ft MSL)	TOS depth (ft below TOC)	BOS depth (ft below TOC)	Dedicated Pump Intake (ft below TOC)	SAP required DTW?	SAP required sampling?	comments
IR76MW13A	NNP	ILA	19.69	8.7	23.7	19.0	Y	Y	
PA16MW16A	D	IR-16	8.58	4.7	19.7	NA	N	N	
PA16MW17A	D	IR-16	8.45	3.8	16.3	NA	Y	N	
PA16MW18A	D	IR-16	8.37	4.9	19.9	NA	Y	N	
PA18MW08A	NNP	IR-18	24.67	9.6	24.6	NA	N2	N	decommissioned
PA18MW09A	B	IR-18	17.66	9.6	24.6	NA	N	N	
PA24MW01A	B	IR-24	10.12	6.7	26.7	NA	N	N	
PA24MW02A	B	IR-24	9.46	6.0	21.5	NA	N1	N	decommissioned
PA24MW03A	B	IR-24	10.09	4.4	14.4	NA	N	N	decommissioned
PA24MW03AD	B	IR-24	9.97	5.4	25.4	NA	N	N	decommissioned
PA28MW50A	C	RU-C1	8.60	4.5	19.5	NA	N	N	
PA28MW51A	C	RU-C1	8.41	5.6	26.1	NA	Y	N	
PA28MW52A	C	RU-C1	8.58	5.6	20.6	NA	N	N	
PA28P02A	C	IR-28	7.73	5.5	20.5	NA	N	N	
PA28P03A	C	RU-C1	7.71	3.8	17.8	NA	N	N	
PA28P04A	C	RU-C1	8.61	4.6	18.1	12.5	N	Y	
PA32MW04A	D	IR-32	7.05	5.1	25.1	NA	Y	N	
PA33MW36A	D	IR-33	9.24	5.6	20.6	NA	Y	N	
PA33MW37A	D	IR-33	9.27	5.6	20.6	NA	Y	N	
PA35P01A	D	IR-35	8.14	5.5	20.5	NA	N	N	
PA36MW01A	E	IR-36	7.64	5.5	21.0	NPI	Y	Y	
PA36MW02A	E	IR-36	8.02	5.5	21.0	15.5	Y	Y1	
PA36MW03A	E	IR-36	9.26	7.5	17.5	NA	N	N	
PA36MW04A	E	IR-36	7.33	5.0	20.5	14.5	Y	Y1	
PA36MW05A	E	IR-36	7.40	4.5	24.5	NA	N1	N	decommissioned
PA36MW06A	E	IR-36	8.94	5.4	25.4	NA	N	N	
PA36MW07A	E	IR-36	6.80	4.4	19.4	14.0	Y	Y	
PA36MW08A	E	IR-36	7.65	5.3	20.3	NPI	Y	Y	
PA36P04AA	E	IR-36	8.03	5.5	20.5	NA	N	N	
PA36P04AB	E	IR-36	8.47	4.0	19.0	NA	N	N	
PA39MW01A	E	IR-38	4.53	5.4	25.4	NA	Y	N	
PA39MW02A	E	IR-39	6.13	5.2	25.7	NA	Y	N	
PA39MW03A	E	NBFA	10.46	6.6	27.1	NA	N	N	
PA50MW01A	B	Parcel B	9.18	5.5	15.7	NA	N1	N1	decommissioned

Table 1-1. Monitoring well construction details.

Well ID	Parcel	Area of Concern	Current Top of Casing (ft MSL)	TOS depth (ft below TOC)	BOS depth (ft below TOC)	Dedicated Pump Intake (ft below TOC)	SAP required DTW?	SAP required sampling?	comments
PA50MW02A	B	IR-26	7.80	5.4	15.4	11.5	Y	N	
PA50MW03A	C	RU-C1	7.03	4.2	14.2	11.0	Y	Y	
PA50MW04A	C	IR-50	7.56	4.0	12.5	NA	Y	N	
PA50MW05A	E	IR-50	6.07	4.4	10.9	NA	Y	N	
PA50MW06A	E	IR-50	7.64	4.5	14.5	NA	Y	N	
PA50MW07A	D	IR-32	8.71	4.5	11.5	10.0	Y	Y	
PA50MW08A	E	IR-50	7.48	4.4	12.4	NA	Y	N	
PA50MW09A	E	IR-50	5.00	4.4	14.4	NA	Y	N	
PA50MW10A	E	IR-50	8.45	4.5	17.5	NA	Y	N	
PA50MW11A	D	IR-50	7.66	4.6	16.6	13.0	N2	N2	decommissioned
PA50MW12A	D	Parcel D	8.62	4.5	16.0	13.0	N2	N2	decommissioned
UT02MW15A	B	IR-62	12.57	5.9	20.9	NA	Y	N	
UT02MW16A	B	IR-62	9.91	3.8	18.8	NA	N	N	decommissioned
UT02MW17A	B	IR-62	10.12	5.7	15.7	NA	N	N	
UT03MW10A	B	IR-23	10.60	4.6	14.1	NA	N	N	decommissioned
UT03MW11A	B	Parcel B	9.94	4.4	19.4	13.0	Y	Y	
UT03MW12A	B	IR-23	10.10	5.4	20.4	NA	N2	N	decommissioned
UT03MW16A	B	IR-23	10.45	5.4	20.4	NA	N	N	

Notes:

N1, N2: Not required, in accordance with SAP Addendum 1 (April 2007) or SAP addendum 2 (December 2007)

Y1, Y2: Required in accordance with SAP Addendum 1 (April 2007) or SAP addendum 2 (December 2007)

Acronyms/Abbreviations:

BOS: bottom of screen (from borehole log)

DTW: Depth to water

ft below TOC: Feet below top of casing

ft MSL: Feet relative to Mean Sea Level

NPI: No pump installed

P: Piezometer

PA: Preliminary Assessment

SAP: Sampling and Analysis Plan (August 2004)

TOC: Top of casing

TOS: Top of screen (from borehole log)

UT = underground tank

Parcel:

B+: Well located in Parcel B but well used for Parcel C compliance

C+: Well located in Parcel C but well used for Parcel B compliance

NNP: Non-Navy Property

Area of Concern:

ILA: Industrial Landfill Area

IR: Installation Restoration

NBFA: Northwest Bay Fill Area

ORPA: Oil Recovery Pond Area

RU: Remedial unit

This page left blank intentionally

Table 1-2. Monitoring well re-development evaluation.

Well ID	Re-development Date	Reason for Re-development	Re-development Effective?	Well Anticipated to be Included in Revised BGMP? 1	Well Anticipated to be Included in Revised BGMP: limited duration sampling only 2	Recommendation
IR01MW48A	4/10/07	Did not stabilize after purging 14 Liters: high turbidity	Yes			No further action
IR01MW53B	4/10/07	Well re-developed prior to dedicated pump installation	Yes			No further action
IR01MW62A	4/6/07	Well re-developed prior to dedicated pump installation	Yes			No further action
IR01MW63A	4/5/07	Well re-developed prior to dedicated pump installation	Yes			No further action
IR01MW64A	4/5/07	Well re-developed before adding to program	Yes			No further action
IR01MWI-7	4/10/07	To improve low recharge rate	No			Continue to evaluate well performance
IR01MWI-8	4/10/07	Well re-developed prior to dedicated pump installation	Yes			No further action
IR02MW126A	9/30/07	To improve low recharge rate	No			Continue to evaluate well performance
IR02MW149A	4/12/07	Did not stabilize after purging 14 Liters	Yes	No		No further action
IR02MW179A	4/10/07	Well re-developed prior to dedicated pump installation	Yes			No further action
IR06MW60A	12/28/07	New well	Yes			No further action
IR07MW26A	4/4/07	Well re-developed prior to dedicated pump installation	Yes		Yes	No further action
IR07MWS-2	4/2/07	Did not stabilize after purging 14 Liters	No	No		No further action
IR10MW13A1	12/14/07	Well re-developed prior to dedicated pump installation	Yes			No further action
IR10MW62A	5/15/07	Did not stabilize after purging 14 Liters	No	No		No further action
IR18MW21A	5/16/07	Did not stabilize until purged 11 Liters, high turbidity	Yes	No		No further action
IR25MW17A	12/28/07	Did not stabilize, purged 14 Liters, high turbidity	No			Continue to evaluate well performance
IR25MW37A	3/25/07	High turbidity	No	No		No further action
IR25MW60A1	11/30/07	Approx. 4 feet of soil in well from damage caused by adjacent remedial action	No	No		No further action
IR26MW47A	4/3/07	Well re-developed prior to dedicated pump installation	Yes			No further action
IR26MW48A	4/4/07	Well re-developed prior to dedicated pump installation	Yes	No		No further action

Table 1-2. Monitoring well re-development evaluation.

Well ID	Re-development Date	Reason for Re-development	Re-development Effective?	Well Anticipated to be Included in Revised BGMP? ¹	Well Anticipated to be Included in Revised BGMP: limited duration sampling only ²	Recommendation
IR26MW49A	4/4/07	Well re-developed prior to dedicated pump installation	Yes			No further action
IR26MW50A	4/4/07	Well re-developed prior to dedicated pump installation	Yes	No		No further action
IR28MW140F	4/13/07	To improve low recharge rate & high turbidity	Yes	No		No further action
IR28MW172F	4/13/07	Well re-developed prior to dedicated pump installation	Yes	No		No further action
IR28MW201F	12/27/07	Well re-developed prior to dedicated pump installation	Yes	No		No further action
IR28MW255F	4/11/07	To improve low recharge rate	Yes	No		No further action
IR28MW270A	4/13/07	Well re-developed prior to dedicated pump installation	Yes		Yes	No further action
IR28MW308A	12/27/07	Did not stabilize, purged 14 Liters	No		Yes	No further action
IR28MW353B	12/12/07	High turbidity	Yes	No		No further action
IR29MW56F	12/27/07	To improve low recharge rate	No		Yes	No further action
IR36MW12A	12/3/07	Did not stabilize, purged 14 Liters	Yes		Yes	No further action
IR36MW127A	1/8/08	Did not stabilize, purged 14 Liters	Yes			No further action
IR36MW128A	1/7/08	Did not stabilize, purged 14 Liters	No	No		No further action
IR64MW05A	4/11/07	To improve low recharge rate	No	No		No further action

Notes:

¹ 3Q2008 is anticipated implementation date for revised sampling program.

² Effective 3Q2008, these wells are anticipated to be sampled for only two semi-annual events then discontinued.

Table 4-1. Summary of groundwater sample information (October-December 2007).

Well ID	Parcel	Sample ID	Sample Date	Sample Time	Comments	Mercury-CLP	Metals-CLP	Pesticides and PCBs-CLP	SVOCs-CLP	VOCs-CLP	EPA160.1 TDS	EPA160.2 TSS	EPA1664 Oil and Grease	EPA300.0 Anions-Inorganics	EPA350.1 Nitrogen as Ammonia	EPA351.2 Nitrogen-Kjeldahl Total	EPA376.1 Sulfide	EPA6010B Dissolved Metals	EPA 7199 Hexavalent Chromium	EPA7470A Dissolved Mercury	EPA8015 Gas	EPA8015M Diesel or Motor Oil	EPA8081A Organochlorine Pesticides	EPA8082 PCBs	EPA8141A Organophosphorus Compounds and Pesticides	EPA8260B VOCs	EPA8270C SVOCs	EPA901.0 Cesium-137	EPA9010B Cyanide	EPA903.1 Radium-226	FPD-GC Organotins	SM2520B Salinity
IR01MW02B	NNP	0740H026	10/4/07	1045								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW03A	NNP	0740H025	10/4/07	0949								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW05A	NNP	0741N004	10/8/07	1246								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW09B	E-2	0741N002	10/8/07	0951								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW10A	E-2	0741D037	10/9/07	0919								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW17B	E-2				obstructed							Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW26B	E-2	0740D022	10/4/07	1136								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW31A	E-2	0740W020	10/4/07	1108								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW366A	E-2				insufficient water							Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW366B	E-2	0741D033	10/8/07	1034								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW367A	E-2				obstructed							Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW38A	E-2	0740D021	10/4/07	1028								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW403A	NNP	0741G023	10/8/07	1107								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW403B	E-2	0740W019	10/4/07	1004								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW42A	E-2	0741D032	10/8/07	0935								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW48A	E-2	0740G014	10/4/07	0946								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			Q
IR01MW53B	E-2	0740G016	10/4/07	1154								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW58A	E-2				damaged																Q	Q		Q		Q	Q					
IR01MW60A	E-2	0741W034	10/8/07	1110								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			Q
IR01MW62A	E-2	0740W025	10/5/07	0850								Q						Q		Q						Q	Q		Q			
IR01MW63A	E-2	0740W026	10/5/07	1013								Q						Q		Q						Q			Q			
IR01MW64A	E-2	0741W035	10/8/07	1222								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			Q
IR01MWI-6	E-2				inaccessible							Q						Q		Q				Q		Q			Q			
IR01MWI-7	E-2	0742W062	10/15/07	1107								Q						Q		Q						Q	Q					Q
IR01MWI-8	E-2	0741W039	10/9/07	0954								Q						Q		Q						Q	Q		Q			Q
IR01MWLF1A	E-2	0740D020	10/4/07	0910								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MWLF2A	E-2	0740H027	10/4/07	1146								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MWLF4A	E-2				inaccessible							Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MWLF4B	E-2	0741W033	10/8/07	0952								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR02MW126A	E	0740W013	10/3/07	0944								Q						Q		Q	Q	Q				Q	Q	Q		Q		Q
IR02MW147A	E	0740G019	10/5/07	0948								Q						Q		Q						Q		Q		Q		Q
IR02MW149A	E	0740G006	10/2/07	1010								Q						Q	Q	Q								Q		Q		Q
IR02MW175A	E	0740W007	10/2/07	1156								Q						Q		Q						Q		Q		Q		Q

Table 4-1. Summary of groundwater sample information (October-December 2007).

Well ID	Parcel	Sample ID	Sample Date	Sample Time	Comments	Mercury-CLP	Metals-CLP	Pesticides and PCBs-CLP	SVOCs-CLP	VOCs-CLP	EPA160.1 TDS	EPA160.2 TSS	EPA1664 Oil and Grease	EPA300.0 Anions-Inorganics	EPA350.1 Nitrogen as Ammonia	EPA351.2 Nitrogen-Kjeldahl Total	EPA376.1 Sulfide	EPA6010B Dissolved Metals	EPA 7199 Hexavalent Chromium	EPA7470A Dissolved Mercury	EPA8015 Gas	EPA8015M Diesel or Motor Oil	EPA8081A Organochlorine Pesticides	EPA8082 PCBs	EPA8141A Organophosphorus Compounds and Pesticides	EPA8260B VOCs	EPA8270C SVOCs	EPA901.0 Cesium-137	EPA9010B Cyanide	EPA903.1 Radium-226	FPD-GC Organotins	SM2520B Salinity			
IR02MW179A	E	0740D008	10/2/07	1342								Q						Q		Q									Q		Q	Q			
IR02MW206A2	E				damaged							Q						Q		Q							Q					Q	Q		
IR02MW209A	E	0740W008	10/2/07	1238								Q						Q		Q							Q			Q		Q	Q		
IR02MW301A	E	0740D007	10/2/07	1049								Q						Q		Q				Q				Q		Q		Q	Q		
IR02MWB-1	E	0741G029	10/10/07	1107								Q						Q	Q	Q								Q		Q		Q	Q		
IR02MWB-2	E				obstructed							Q						Q	Q	Q												Q			
IR02MWB-5	E				obstructed							Q						Q		Q				Q											
IR02MWCS-W	E				inaccessible							Q						Q									Q								
IR03MW218A2	E	0741D035	10/8/07	1459								Q						Q	Q	Q	Q	Q		Q			Q	Q							
IR03MW224A	E	0740D024	10/4/07	1509								Q						Q		Q				Q			Q	Q							
IR03MW228B	E	0741W036	10/8/07	1434																							Q								
IR03MW342A	E	0741G024	10/8/07	1336								Q						Q	Q	Q			Q				Q	Q							
IR03MW369A	E				NAPL							Q						Q		Q	Q	Q	Q	Q			Q	Q							
IR03MW370A	E				NAPL							Q						Q		Q	Q	Q	Q	Q			Q	Q							
IR03MW371A	E				NAPL							Q						Q		Q	Q	Q	Q	Q			Q	Q				Q			
IR03MW373B	E	0740D023	10/4/07	1403								Q						Q		Q	Q	Q	Q	Q			Q	Q							
IR04MW13A	E-2	0741D034	10/8/07	1138								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q	Q		Q					
IR04MW36A	E-2	0741N003	10/8/07	1145								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q	Q		Q					
IR04MW37A	E	0740W017	10/3/07	1511																							Q								
IR05MW85A	E	0740W015	10/3/07	1229								Q								Q							Q	Q							
IR06MW32A	C	0740D009	10/2/07	1534																	Q	Q						Q							
IR06MW35A	C	0740H014	10/2/07	1224																								Q							
IR06MW40A	C	0740H010	10/2/07	0920																								Q							
IR06MW42A	C+	0740H018	10/3/07	0909		Q	Q	Q	Q	Q		Q								Q		Q	Q												
IR06MW47F	C	0740H011	10/2/07	0958																								Q							
IR06MW52F	C	0740H008	10/1/07	1515																								Q							
IR06MW53F	C	0740H013	10/2/07	1125								Q							Q									Q							
IR06MW54F	C	0742W067	10/16/07	1330								Q							Q	Q				Q				Q							
IR06MW55F	C	0742W068	10/16/07	1445																								Q							
IR06MW59A1	C	0740W005	10/1/07	1515																								Q	Q						
IR06MW59A2	C	0740W004	10/1/07	1406																								Q							
IR06MW60A	C				inaccessible					Q		Q							Q	Q	Q	Q	Q												
IR07MW19A	B				inaccessible	Q	Q			Q		Q								Q		Q	Q												

Table 4-1. Summary of groundwater sample information (October-December 2007).

Well ID	Parcel	Sample ID	Sample Date	Sample Time	Comments	Mercury-CLP	Metals-CLP	Pesticides and PCBs-CLP	SVOCs-CLP	VOCs-CLP	EPA160.1 TDS	EPA160.2 TSS	EPA1664 Oil and Grease	EPA300.0 Anions-Inorganics	EPA350.1 Nitrogen as Ammonia	EPA351.2 Nitrogen-Kjeldahl Total	EPA376.1 Sulfide	EPA6010B Dissolved Metals	EPA 7199 Hexavalent Chromium	EPA7470A Dissolved Mercury	EPA8015 Gas	EPA8015M Diesel or Motor Oil	EPA8081A Organochlorine Pesticides	EPA8082 PCBs	EPA8141A Organophosphorus Compounds and Pesticides	EPA8260B VOCs	EPA8270C SVOCs	EPA901.0 Cesium-137	EPA9010B Cyanide	EPA903.1 Radium-226	FPD-GC Organotins	SM2520B Salinity	
IR07MW20A1	B	0741W053	10/11/07	1114		Q	Q			Q		Q							Q		Q	Q											
IR07MW21A1	B	0741N018	10/11/07	1031		Q	Q			Q		Q							Q		Q	Q											
IR07MW23A	B				sentinel - 1&3rd qtrs only	SA	SA			SA		SA							SA		SA	SA											
IR07MW24A	B	0741N019	10/11/07	1125		Q	Q			Q		Q							Q		Q	Q											
IR07MW25A	B	0741E011	10/11/07	1032		Q	Q			Q		Q							Q		Q	Q											
IR07MW26A	B	0741D049	10/11/07	1346		Q	Q			Q		Q							Q		Q	Q											
IR07MW27A	B				sentinel - 1&3rd qtrs only	SA	SA	SA	SA	SA		SA							SA		SA	SA											
IR07MW28A	NNP	0741W054	10/11/07	1233		Q	Q	Q	Q	Q		Q							Q		Q	Q											
IR07MWS-2	B	0741W052	10/11/07	0951		Q	Q			Q		Q							Q		Q	Q											
IR07MWS-4	B	0741E012	10/11/07	1116		Q	Q			Q		Q							Q		Q	Q											
IR09MW35A	D	0741N007	10/9/07	0936								Q							Q	Q											Q		
IR09MW36A	D	0742H049	10/15/07	1412								Q							Q	Q											Q		
IR09MW37A	D	0742E029	10/17/07	1121								Q							Q	Q													
IR09MW38A	D	0742W063	10/15/07	1433								Q							Q	Q													
IR09MW39A	D	0741N009	10/9/07	1031								Q							Q	Q													
IR09MW44A	D	0742H053	10/17/07	0938								Q							Q	Q													
IR09MW45F	D	0741N010	10/9/07	1228								Q							Q	Q													
IR09MW51F	D				inaccessible							Q							Q	Q							Q						
IR09MW52A	D	0742D065	10/17/07	0955								Q							Q	Q													
IR09MW61A	D	0741E002	10/9/07	1022							Q	Q							Q	Q							Q						Q
IR09MW62A	D	0741E003	10/9/07	1106							Q	Q							Q	Q							Q						Q
IR09MW63A	D	0741E004	10/9/07	1206							Q	Q							Q	Q							Q						Q
IR09P040A	D	0742D057	10/15/07	1034								Q							Q	Q											Q		
IR09PPY1	D				inaccessible							Q							Q	Q											Q		
IR10MW13A1	B	0740W002	10/1/07	1107						Q																							
IR10MW14A	B				inaccessible					Q																							
IR10MW28A	B				insufficient water					Q		SA							SA	SA	SA	SA	SA										
IR10MW31A1	B	0740H020	10/3/07	1129		Q	Q			Q		Q							Q		Q	Q											
IR10MW33A	B	0740D011	10/3/07	0931						Q																		Q					
IR10MW59A	B	0740G004	10/1/07	1506						Q																							
IR10MW61A	B	0740H003	10/1/07	1132																								Q					
IR10MW62A	B	0740H002	10/1/07	1057																								Q					
IR10MW71A	B	0740G003	10/1/07	1312																								Q					

Table 4-1. Summary of groundwater sample information (October-December 2007).

Well ID	Parcel	Sample ID	Sample Date	Sample Time	Comments	Mercury-CLP	Metals-CLP	Pesticides and PCBs-CLP	SVOCs-CLP	VOCs-CLP	EPA160.1 TDS	EPA160.2 TSS	EPA1664 Oil and Grease	EPA300.0 Anions-Inorganics	EPA350.1 Nitrogen as Ammonia	EPA351.2 Nitrogen-Kjeldahl Total	EPA376.1 Sulfide	EPA6010B Dissolved Metals	EPA 7199 Hexavalent Chromium	EPA7470A Dissolved Mercury	EPA8015 Gas	EPA8015M Diesel or Motor Oil	EPA8081A Organochlorine Pesticides	EPA8082 PCBs	EPA8141A Organophosphorus Compounds and Pesticides	EPA8260B VOCs	EPA8270C SVOCs	EPA901.0 Cesium-137	EPA9010B Cyanide	EPA903.1 Radium-226	FPD-GC Organotins	SM2520B Salinity	
IR10MW76A	B	0740G002	10/1/07	1122																						Q							
IR10MW79A	B	0740D004	10/1/07	1454																						Q							
IR10MW80A	B	0740D002	10/1/07	1207																						Q							
IR10MW81A	B	0740D013	10/3/07	1149								Q						Q	Q							Q							
IR10MW82A	B	0740D012	10/3/07	1039								Q						Q	Q							Q							
IR11MW25A	E				damaged																		Q			Q							
IR11MW27A	E				insufficient water																					Q						Q	
IR12MW13A	E	0740H031	10/4/07	1524																						Q							
IR12MW14A	E	0742D056	10/15/07	0918																						Q							
IR12MW17A	E				damaged																Q	Q	Q			Q	Q			Q			
IR12MW21A	E				NAPL							Q						Q								Q	Q						
IR15MW06A	E	0740G007	10/2/07	1358																						Q							
IR15MW10F	E	0740G008	10/2/07	1525																						Q							
IR18MW21A	B	0741D048	10/11/07	1125		Q	Q	Q	Q	Q		Q							Q			Q	Q										
IR22MW16A	D	0740H033	10/5/07	0849								Q							Q													Q	
IR22MW20A	D	0740H034	10/5/07	0928								Q							Q														
IR25MW16A	C	0740D026	10/5/07	1103																				Q		Q	Q						
IR25MW17A	C+	0740H019	10/3/07	1038						Q		SA						SA	SA	SA	SA	SA			Q								
IR25MW37A	C+	0740W003	10/1/07	1206						Q																							
IR25MW40A	C	0740H012	10/2/07	1033																							Q						
IR25MW60A1	C				obstructed						Q													Q		Q	Q						Q
IR25MW61A1	B+	0740H005	10/1/07	1342							Q															Q	Q						Q
IR25MW61A2	B+	0740H006	10/1/07	1417							Q															Q	Q						Q
IR26MW41A	B	0741D050	10/11/07	1450		Q	Q			Q		Q							Q			Q	Q										
IR26MW46A	B	0741W046	10/10/07	1150		Q	Q	Q	Q			Q							Q														
IR26MW47A	B	0741D046	10/10/07	1149		Q	Q	Q	Q			Q							Q														
IR26MW48A	B	0741W045	10/10/07	1021		Q	Q	Q	Q			Q							Q														
IR26MW49A	B	0741N016	10/10/07	1110		Q	Q	Q	Q			Q							Q														
IR26MW50A	B	0741N015	10/10/07	0943		Q	Q	Q	Q			Q							Q														
IR28MW122A	C	0741E007	10/10/07	1339																							Q					Q	
IR28MW125A	C	0742E019	10/15/07	0947								Q							Q	Q							Q						
IR28MW136A	C	0741E015	10/12/07	1002								Q							Q								Q	Q					
IR28MW140F	C	0741E008	10/10/07	1427																							Q						

Table 4-1. Summary of groundwater sample information (October-December 2007).

Well ID	Parcel	Sample ID	Sample Date	Sample Time	Comments	Mercury-CLP	Metals-CLP	Pesticides and PCBs-CLP	SVOCs-CLP	VOCs-CLP	EPA160.1 TDS	EPA160.2 TSS	EPA1664 Oil and Grease	EPA300.0 Anions-Inorganics	EPA350.1 Nitrogen as Ammonia	EPA351.2 Nitrogen-Kjeldahl Total	EPA376.1 Sulfide	EPA6010B Dissolved Metals	EPA 7199 Hexavalent Chromium	EPA7470A Dissolved Mercury	EPA8015 Gas	EPA8015M Diesel or Motor Oil	EPA8081A Organochlorine Pesticides	EPA8082 PCBs	EPA8141A Organophosphorus Compounds and Pesticides	EPA8260B VOCs	EPA8270C SVOCs	EPA901.0 Cesium-137	EPA9010B Cyanide	EPA903.1 Radium-226	FPD-GC Organotins	SM2520B Salinity	
IR28MW150A	C	0741W037	10/8/07	1526																							Q						
IR28MW151A	C	0742E020	10/15/07	1115							Q							Q	Q	Q							Q	Q					
IR28MW155A	C	0740W029	10/5/07	1323																	Q	Q		Q			Q	Q					
IR28MW169A	C				inaccessible																						Q						
IR28MW171A	C	0740D030	10/5/07	1416																				Q	Q			Q					
IR28MW171B	C	0740D028	10/5/07	1322						Q																	Q	Q					Q
IR28MW172F	C	0742D061	10/16/07	1353																	Q	Q					Q						
IR28MW173B	C	0741E005	10/9/07	1406																							Q						
IR28MW188F	C	0741E013	10/11/07	1455																	Q	Q					Q						
IR28MW189F	C	0742E023	10/15/07	1558																							Q						
IR28MW190F	C	0741D052	10/12/07	1026																							Q						
IR28MW200A	C	0741W040	10/9/07	1313																							Q						
IR28MW201F	C	0741W042	10/9/07	1404																							Q						
IR28MW211F	C	0741N024	10/12/07	1051							Q									Q							Q						
IR28MW216F	C	0741D053	10/12/07	1155																							Q						
IR28MW217A	C	0741N025	10/12/07	1202																							Q						
IR28MW221A	C	0741N005	10/8/07	1531						Q																	Q						Q
IR28MW221B	C	0741N011	10/9/07	1428						Q																	Q						Q
IR28MW255F	C	0741H043	10/10/07	1414																							Q						
IR28MW268A	C	0741H044	10/10/07	1446																							Q						
IR28MW270A	C	0741G025	10/8/07	1457																							Q						
IR28MW272A	C	0741W055	10/11/07	1436																							Q						
IR28MW272F	C	0741W056	10/11/07	1510						Q																	Q						Q
IR28MW287A	C	0742H055	10/17/07	1533																							Q						
IR28MW294A	C	0741W043	10/9/07	1508																							Q					Q	
IR28MW298A	C	0741E017	10/12/07	1352																							Q						
IR28MW299B	C	0741W058	10/12/07	0931																							Q						
IR28MW300F	C	0742E022	10/15/07	1519																							Q	Q					
IR28MW308A	C	0741H042	10/10/07	1331																							Q						
IR28MW309B	C	0741N013	10/9/07	1524																							Q						
IR28MW311A	C	0742D063	10/16/07	1600																							Q						
IR28MW312F	C	0742D062	10/16/07	1456																							Q	Q					
IR28MW315A	C	0741N020	10/11/07	1451						Q																	Q						Q

Table 4-1. Summary of groundwater sample information (October-December 2007).

Well ID	Parcel	Sample ID	Sample Date	Sample Time	Comments	Mercury-CLP	Metals-CLP	Pesticides and PCBs-CLP	SVOCs-CLP	VOCs-CLP	EPA160.1 TDS	EPA160.2 TSS	EPA1664 Oil and Grease	EPA300.0 Anions-Inorganics	EPA350.1 Nitrogen as Ammonia	EPA351.2 Nitrogen-Kjeldahl Total	EPA376.1 Sulfide	EPA6010B Dissolved Metals	EPA 7199 Hexavalent Chromium	EPA7470A Dissolved Mercury	EPA8015 Gas	EPA8015M Diesel or Motor Oil	EPA8081A Organochlorine Pesticides	EPA8082 PCBs	EPA8141A Organophosphorus Compounds and Pesticides	EPA8260B VOCs	EPA8270C SVOCs	EPA901.0 Cesium-137	EPA9010B Cyanide	EPA903.1 Radium-226	FPD-GC Organotins	SM2520B Salinity
IR28MW315B	C	0741N021	10/11/07	1524							Q															Q						Q
IR28MW315F	C	0741W059	10/12/07	1100							Q															Q						Q
IR28MW350F	C	0742G033	10/18/07	1026																						Q						
IR28MW352A	C	0741N026	10/12/07	1415																						Q						
IR28MW353A	C	0741D040	10/9/07	1359																						Q						
IR28MW353B	C	0741D041	10/9/07	1438							Q															Q	Q					Q
IR28MW355F	C	0741N023	10/12/07	1008																						Q						
IR28MW394A	C	0742E031	10/17/07	1510																	Q	Q				Q						
IR28MW394B	C	0742E025	10/16/07	1030																	Q	Q				Q						
IR28MW395F	C	0741E016	10/12/07	1141																						Q						
IR28MW396A	C	0741D054	10/12/07	1419																						Q						
IR28MW396B	C	0742E021	10/15/07	1425																						Q						
IR28MW397B	C	0742H051	10/16/07	1425																						Q	Q					
IR28MW398A	C	0742W065	10/16/07	1031																						Q						
IR28MW398B	C	0742W066	10/16/07	1120																						Q						
IR28MW399B	C	0740W030	10/5/07	1423																						Q						
IR28MW406	C	0741W049	10/10/07	1444																						Q						
IR28MW407	C	0741W048	10/10/07	1355																						Q						
IR29MW56F	C	0742D068	10/18/07	0938																	Q	Q				Q	Q					Q
IR29MW58F	C	0741W060	10/12/07	1449																	Q	Q	Q			Q						
IR29MW59F	C	0740H040	10/5/07	1417																						Q						Q
IR29MW72F	C	0742H048	10/15/07	1112								Q						Q	Q													
IR29MW85F	C	0740H039	10/5/07	1335								Q						Q					Q			Q						
IR30MW04F	C	0740H038	10/5/07	1131																						Q						
IR34MW36A	D	0742D066	10/17/07	1103								Q						Q	Q													
IR36MW09A	E	0740W022	10/4/07	1422																						Q						
IR36MW11A	E	0740W023	10/4/07	1537																						Q						
IR36MW120B	E				annual - 1st qtr only																					A						
IR36MW121A	E				annual - 1st qtr only																					A						
IR36MW122A	E	0740D016	10/3/07	1354																						Q						
IR36MW123B	E	0740D018	10/3/07	1452																						Q						
IR36MW125A	E				insufficient water																					Q	Q					
IR36MW127A	E	0740H015	10/2/07	1431																						Q						

Table 4-1. Summary of groundwater sample information (October-December 2007).

Well ID	Parcel	Sample ID	Sample Date	Sample Time	Comments	Mercury-CLP	Metals-CLP	Pesticides and PCBs-CLP	SVOCs-CLP	VOCs-CLP	EPA160.1 TDS	EPA160.2 TSS	EPA1664 Oil and Grease	EPA300.0 Anions-Inorganics	EPA350.1 Nitrogen as Ammonia	EPA351.2 Nitrogen-Kjeldahl Total	EPA376.1 Sulfide	EPA6010B Dissolved Metals	EPA 7199 Hexavalent Chromium	EPA7470A Dissolved Mercury	EPA8015 Gas	EPA8015M Diesel or Motor Oil	EPA8081A Organochlorine Pesticides	EPA8082 PCBs	EPA8141A Organophosphorus Compounds and Pesticides	EPA8260B VOCs	EPA8270C SVOCs	EPA901.0 Cesium-137	EPA9010B Cyanide	EPA903.1 Radium-226	FPD-GC Organotins	SM2520B Salinity		
IR36MW128A	E	0740W011	10/2/07	1528																							Q							
IR36MW129B	E	0740W009	10/2/07	1430																							Q							
IR36MW12A	E	0740H021	10/3/07	1337																	Q	Q					Q	Q						
IR36MW14A	E	0740G011	10/3/07	1450																							Q							
IR36MW16A	D	0740W021	10/4/07	1333																							Q							
IR36MW17A	E	0740W028	10/5/07	1129																				Q			Q							
IR39MW21A	E				NAPL																Q	Q	Q				Q	Q						
IR39MW23A	E	0740H022	10/3/07	1424																								Q						
IR39MW33A	E	0740G020	10/5/07	1353								Q							Q															
IR39MW36A	E	0740G010	10/3/07	1326																							Q							
IR44MW08A	D	0742W070	10/17/07	1019																							Q							
IR46MW37A	B				inaccessible	Q	Q			Q		Q							Q		Q	Q												
IR56MW39A	E	0740W016	10/3/07	1416																	Q	Q						Q	Q					
IR58MW25F	C	0742H047	10/15/07	1015								Q							Q	Q								Q						
IR58MW26A	C	0741G027	10/10/07	0946																								Q						
IR58MW31A	C	0742D060	10/16/07	1138																	Q	Q	Q	Q				Q						
IR58MW31F	C	0741D043	10/10/07	0937																								Q						
IR58MW32B	C	0742H046	10/15/07	0916																				Q				Q						
IR58MW33B	C	0741D045	10/10/07	1036																								Q						
IR61MW05A	B				sentinel - 1st&3rd qtrs only	SA	SA			SA		SA							SA		SA	SA												
IR64MW05A	C	0742H057	10/18/07	1127																								Q					Q	
IR70MW04A	D	0742E026	10/16/07	1322																								Q						
IR70MW07A	D	0742H054	10/17/07	1121																								Q						
IR71MW03A	D	0740G017	10/4/07	1454																								Q	Q					
IR71MW04A	D	0740H037	10/5/07	1055							Q																	Q						Q
IR71MW12B	D	0740H035	10/5/07	1020																								Q						
IR74MW01A	E	0740H029	10/4/07	1452																								Q						
IR75MW05B	NNP	0741G022	10/8/07	0930								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q	Q		Q				
IR76MW13A	NNP	0740H028	10/4/07	1418																								Q						
PA28P04A	C	0741E009	10/10/07	1511																								Q						
PA36MW01A	E				annual - 1st qtr only																							A						
PA36MW02A	E	0741D038	10/9/07	1102								Q							Q	Q														
PA36MW04A	E	0740W014	10/3/07	1102																								Q						
PA36MW07A	E	0740H016	10/2/07	1517																								Q						

Table 4-1. Summary of groundwater sample information (October-December 2007).

Well ID	Parcel	Sample ID	Sample Date	Sample Time	Comments	Mercury-CLP	Metals-CLP	Pesticides and PCBs-CLP	SVOCs-CLP	VOCs-CLP	EPA160.1 TDS	EPA160.2 TSS	EPA1664 Oil and Grease	EPA300.0 Anions-Inorganics	EPA350.1 Nitrogen as Ammonia	EPA351.2 Nitrogen-Kjeldahl Total	EPA376.1 Sulfide	EPA6010B Dissolved Metals	EPA 7199 Hexavalent Chromium	EPA7470A Dissolved Mercury	EPA8015 Gas	EPA8015M Diesel or Motor Oil	EPA8081A Organochlorine Pesticides	EPA8082 PCBs	EPA8141A Organophosphorus Compounds and Pesticides	EPA8260B VOCs	EPA8270C SVOCs	EPA901.0 Cesium-137	EPA9010B Cyanide	EPA903.1 Radium-226	FPD-GC Organotins	SM2520B Salinity	
PA36MW08A	E				NAPL																					Q	Q						
PA50MW03A	C	0741D039	10/9/07	1317																						Q			Q			Q	
PA50MW07A	D	0742E027	10/16/07	1507							Q							Q		Q						Q							
PA50MW11A	D				inaccessible						Q							Q	Q														
PA50MW12A	D	0742W071	10/17/07	1502							Q							Q	Q														
UT03MW11A	B				sentinel - 1st&3rd qtrs only	SA	SA			SA		SA							SA		SA	SA											

Notes:
The analyses to be performed are as outlined in SAP Tables 7B-7M.

Abbreviations/Acronyms:
A: Annual sampling frequency
NAPL: Non-aqueous phase liquid
PCB: Polychlorinated biphenyls
Q: Quarterly sampling frequency
SA: Semiannual sampling frequency; sampled in 1st and 3rd quarters
SVOC: Semi-volatile organic compounds
TDS: Total dissolved solids
TSS: Total suspended solids
VOC: Volatile organic compounds

Parcel:
B+: Well is physically located in Parcel B, is assigned in the SAP to Parcel C, and is not assigned in the RAMP.
C+: Well is physically located in Parcel C, is assigned in the SAP to Parcel C, and is assigned in the RAMP to Parcel B.
NNP: Non-Navy Property, reported by SAP-assigned parcel

Table 4-2. Summary of groundwater sample information (January-March 2008).

Well ID	Parcel	Sample ID	Sample Date	Sample Time	Comments	Mercury-CLP	Metals-CLP	Pesticides and PCBs-CLP	SVOCs-CLP	VOCs-CLP	EPA160.1 TDS	EPA160.2 TSS	EPA1664 Oil and Grease	EPA300.0 Anions-Inorganics	EPA350.1 Nitrogen as Ammonia	EPA351.2 Nitrogen-Kjeldahl Total	EPA376.1 Sulfide	EPA6010B Dissolved Metals	EPA 7199 Hexavalent Chromium	EPA7470A Dissolved Mercury	EPA8015B Gas	EPA8015M Diesel or Motor Oil	EPA8081A Organochlorine Pesticides	EPA8082 PCBs	EPA8141A Organophosphorus Compounds and Pesticides	EPA8260B VOCs	EPA8270C SVOCs	EPA901.0 Cesium-137	EPA9010B Cyanide	EPA903.1 Radium-226	FPD-GC Organotins	SM2520B Salinity
IR01MW02B	NNP	0809H020	02/26/08	1207								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW03A	NNP	0809H019	02/26/08	1121								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW05A	NNP	0809D017	02/26/08	0906								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW09B	E-2	0809D011	02/25/08	0958								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW10A	E-2	0809P008	02/26/08	1030								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW26B	E-2	0809E017	02/27/08	1002								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW31A	E-2	0809D024	02/27/08	1058								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW366B	E-2	0809N002	02/25/08	0925								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW38A	E-2	0809E016	02/27/08	0858								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW403A	NNP	0809H023	02/26/08	1512								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW403B	E-2				inaccessible							Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW42A	E-2	0809N003	02/25/08	1029								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW48A	E-2	0810D052	03/04/08	1347								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q		Q	
IR01MW53B	E-2	0810D053	03/04/08	1501								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MW60A	E-2	0809D020	02/26/08	1357								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q		Q	
IR01MW62A	E-2	0809D025	02/27/08	1357								Q						Q		Q						Q	Q		Q			
IR01MW63A	E-2	0809P011	02/26/08	1405								Q						Q		Q						Q			Q			
IR01MW64A	E-2	0809D019	02/26/08	1246								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q		Q	
IR01MW1-7	E-2	0811E079	03/10/08	1540								Q						Q		Q						Q	Q				Q	
IR01MW1-8	E-2	0810G002	03/04/08	1115								Q						Q		Q						Q	Q		Q		Q	
IR01MWLF1A	E-2	0809D018	02/26/08	1013								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MWLF2A	E-2	0809D023	02/27/08	0914								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR01MWLF4B	E-2	0809P003	02/25/08	1026								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR02MW126A	E	0808E010	02/21/08	0929								Q						Q		Q	Q	Q				Q	Q	Q		Q	Q	
IR02MW147A	E	0810E051	03/04/08	1008								Q						Q		Q						Q		Q		Q	Q	
IR02MW149A	E	0810E052	03/04/08	1129								Q						Q	Q	Q								Q		Q	Q	
IR02MW175A	E	0808D008	02/21/08	1250								Q						Q		Q						Q		Q		Q	Q	
IR02MW179A	E	0809P002	02/25/08	0924								Q						Q		Q								Q		Q	Q	
IR02MW209A	E	0808H012	02/21/08	0907								Q						Q		Q						Q		Q		Q	Q	
IR02MW301A	E	0808D007	02/21/08	1118								Q						Q		Q			Q			Q		Q		Q	Q	
IR02MWB-1	E	0808E011	02/21/08	1133								Q						Q	Q	Q								Q		Q	Q	
IR03MW218A2	E	0810D051	03/04/08	1051								Q						Q	Q	Q	Q	Q		Q		Q	Q					
IR03MW224A	E	0809E022	02/27/08	1500								Q						Q		Q				Q		Q	Q					

Table 4-2. Summary of groundwater sample information (January-March 2008).

Well ID	Parcel	Sample ID	Sample Date	Sample Time	Comments	Mercury-CLP	Metals-CLP	Pesticides and PCBs-CLP	SVOCs-CLP	VOCs-CLP	EPA160.1 TDS	EPA160.2 TSS	EPA1664 Oil and Grease	EPA300.0 Anions-Inorganics	EPA350.1 Nitrogen as Ammonia	EPA351.2 Nitrogen-Kjeldahl Total	EPA376.1 Sulfide	EPA6010B Dissolved Metals	EPA 7199 Hexavalent Chromium	EPA7470A Dissolved Mercury	EPA8015B Gas	EPA8015M Diesel or Motor Oil	EPA8081A Organochlorine Pesticides	EPA8082 PCBs	EPA8141A Organophosphorus Compounds and Pesticides	EPA8260B VOCs	EPA8270C SVOCs	EPA901.0 Cesium-137	EPA9010B Cyanide	EPA903.1 Radium-226	FPD-GC Organotins	SM2520B Salinity	
IR03MW228B	E	0810D050	03/04/08	0948																						Q							
IR03MW342A	E	0809D031	02/28/08	0914							Q							Q	Q	Q			Q			Q	Q						
IR03MW369A	E				NAPL						Q							Q		Q	Q	Q		Q		Q	Q						
IR03MW370A	E				NAPL						Q							Q		Q	Q	Q	Q	Q		Q	Q						
IR03MW371A	E				NAPL						Q							Q		Q	Q	Q		Q		Q	Q				Q		
IR03MW373B	E	0809E020	02/27/08	1346							Q							Q		Q	Q	Q	Q	Q		Q	Q						
IR04MW13A	E-2	0809H025	02/27/08	0846							Q	Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q		Q				
IR04MW36A	E-2	0809D012	02/25/08	1142							Q	Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q	Q		Q			
IR04MW37A	E	0809P007	02/26/08	0945																							Q						
IR05MW85A	E	0809H026	02/27/08	0954							Q									Q							Q	Q					
IR06MW32A	C	0810E045	03/03/08	1349																	Q	Q					Q						
IR06MW35A	C	0810N011	03/03/08	1401																							Q						
IR06MW40A	C	0810E046	03/03/08	1454																							Q						
IR06MW42A	C+	0810H058	03/05/08	1028		Q	Q	Q	Q	Q		Q							Q		Q	Q											
IR06MW47F	C	0810E063	03/06/08	1210																							Q						
IR06MW52F	C	0810N012	03/03/08	1435																							Q						
IR06MW53F	C	0810N013	03/03/08	1509							Q							Q									Q						
IR06MW54F	C	0809E024	02/28/08	0846							Q							Q	Q				Q				Q						
IR06MW55F	C	0809E025	02/28/08	0933																							Q						
IR06MW59A1	C				inaccessible																						Q	Q					
IR06MW59A2	C				inaccessible																						Q						
IR06MW60A	C	0810E053	03/04/08	1408						Q		Q						Q	Q	Q	Q	Q											
IR07MW19A	B				inaccessible	Q	Q			Q		Q							Q		Q	Q											
IR07MW20A1	B	0810E042	03/03/08	1101		Q	Q			Q		Q							Q		Q	Q											
IR07MW21A1	B	0810N009	03/03/08	0959		Q	Q			Q		Q							Q		Q	Q											
IR07MW23A	B	0810E040	03/03/08	0904		SA	SA			SA		SA							SA		SA	SA											
IR07MW24A	B	0810N008	03/03/08	0857		Q	Q			Q		Q							Q		Q	Q											
IR07MW25A	B	0810D047	03/03/08	1054		Q	Q			Q		Q							Q		Q	Q											
IR07MW26A	B	0810D045	03/03/08	0903		Q	Q			Q		Q							Q		Q	Q											
IR07MW27A	B	0810E041	03/03/08	0959		SA	SA	SA	SA	SA		SA							SA		SA	SA											
IR07MW28A	NNP	0810E055	03/05/08	1058		Q	Q	Q	Q	Q		Q							Q		Q	Q											
IR07MWS-2	B	0810N010	03/03/08	1148		Q	Q			Q		Q							Q		Q	Q											
IR07MWS-4	B	0810D046	03/03/08	1002		Q	Q			Q		Q							Q		Q	Q											

Table 4-2. Summary of groundwater sample information (January-March 2008).

Well ID	Parcel	Sample ID	Sample Date	Sample Time	Comments	Mercury-CLP	Metals-CLP	Pesticides and PCBs-CLP	SVOCs-CLP	VOCs-CLP	EPA160.1 TDS	EPA160.2 TSS	EPA1664 Oil and Grease	EPA300.0 Anions-Inorganics	EPA350.1 Nitrogen as Ammonia	EPA351.2 Nitrogen-Kjeldahl Total	EPA376.1 Sulfide	EPA6010B Dissolved Metals	EPA 7199 Hexavalent Chromium	EPA7470A Dissolved Mercury	EPA8015B Gas	EPA8015M Diesel or Motor Oil	EPA8081A Organochlorine Pesticides	EPA8082 PCBs	EPA8141A Organophosphorus Compounds and Pesticides	EPA8260B VOCs	EPA8270C SVOCs	EPA901.0 Cesium-137	EPA9010B Cyanide	EPA903.1 Radium-226	FPD-GC Organotins	SM2520B Salinity	
IR09MW35A	D				inaccessible							Q						Q	Q											Q			
IR09MW36A	D	0810D063	03/06/08	0925								Q						Q	Q											Q			
IR09MW37A	D				inaccessible							Q						Q	Q														
IR09MW38A	D				inaccessible							Q						Q	Q														
IR09MW39A	D				inaccessible							Q						Q	Q														
IR09MW44A	D				inaccessible							Q						Q	Q														
IR09MW45F	D	0811E076	03/10/08	0936								Q						Q	Q														
IR09MW51F	D				inaccessible							Q						Q	Q								Q						
IR09MW52A	D				inaccessible							Q						Q	Q														
IR09MW61A	D	0809H035	02/28/08	0904							Q	Q						Q	Q								Q						Q
IR09MW62A	D	0810E060	03/06/08	0958							Q	Q						Q	Q								Q						Q
IR09MW63A	D				inaccessible						Q	Q						Q	Q								Q						Q
IR09P040A	D	0811E077	03/10/08	1115								Q						Q	Q												Q		
IR09PPY1	D				inaccessible							Q						Q	Q											Q			
IR10MW13A1	B	0810E049	03/03/08	1552						Q																							
IR10MW14A	B				inaccessible					Q																							
IR10MW31A1	B				inaccessible	Q	Q			Q		Q								Q		Q	Q										
IR10MW33A	B	0810D048	03/03/08	1549						Q																		Q					
IR10MW59A	B	0811N016	03/10/08	1021						Q																							
IR10MW61A	B	0810H054	03/04/08	1457																							Q						
IR10MW62A	B				inaccessible																						Q						
IR10MW71A	B	0811N017	03/10/08	1058																							Q						
IR10MW76A	B	0811N015	03/10/08	0930																							Q						
IR10MW79A	B				inaccessible																						Q						
IR10MW80A	B	0810E047	03/03/08	1524																							Q						
IR10MW81A	B	0810H060	03/05/08	1201								Q						Q	Q								Q						
IR10MW82A	B	0810E056	03/05/08	1153								Q						Q	Q								Q						
IR12MW13A	E	0809D021	02/26/08	1513																							Q						
IR12MW14A	E	0809E031	02/29/08	0838																							Q						
IR12MW21A	E				NAPL							Q						Q									Q	Q					
IR15MW06A	E	0809H027	02/27/08	1034																							Q						
IR15MW10F	E	0809H029	02/27/08	1110																							Q						
IR18MW21A	B				Poss. soil intrusion into well	Q	Q	Q	Q	Q		Q							Q		Q	Q											

Table 4-2. Summary of groundwater sample information (January-March 2008).

Well ID	Parcel	Sample ID	Sample Date	Sample Time	Comments	Mercury-CLP	Metals-CLP	Pesticides and PCBs-CLP	SVOCs-CLP	VOCs-CLP	EPA160.1 TDS	EPA160.2 TSS	EPA1664 Oil and Grease	EPA300.0 Anions-Inorganics	EPA350.1 Nitrogen as Ammonia	EPA351.2 Nitrogen-Kjeldahl Total	EPA376.1 Sulfide	EPA6010B Dissolved Metals	EPA 7199 Hexavalent Chromium	EPA7470A Dissolved Mercury	EPA8015B Gas	EPA8015M Diesel or Motor Oil	EPA8081A Organochlorine Pesticides	EPA8082 PCBs	EPA8141A Organophosphorus Compounds and Pesticides	EPA8260B VOCs	EPA8270C SVOCs	EPA901.0 Cesium-137	EPA9010B Cyanide	EPA903.1 Radium-226	FPD-GC Organotins	SM2520B Salinity		
IR22MW07A	D	0810E071	03/07/08	1217																											A2			
IR22MW08A	D	0810E067	03/07/08	0906																											A2			
IR22MW15A	D	0810E069	03/07/08	1045																											A2			
IR22P15A1	D	0810E068	03/07/08	1005																											A2			
IR22P15A2	D	0810E070	03/07/08	1132																											A2			
IR22MW16A	D	0809E027	02/28/08	1056								Q							Q											A2		Q		
IR22MW20A	D	0809E026	02/28/08	1023								Q							Q											A2				
IR25MW16A	C	0810H071	03/06/08	1451																				Q			Q	Q						
IR25MW17A	C+	0810E057	03/05/08	1424						Q		SA							SA	SA	SA	SA	SA											
IR25MW37A	C+	0810H059	03/05/08	1133						Q																								
IR25MW40A	C	0810E043	03/03/08	1318																							Q							
IR25MW61A1	B+	0810D065	03/06/08	1317							Q																Q	Q					Q	
IR25MW61A2	B+	0810D066	03/06/08	1422							Q																Q	Q					Q	
IR26MW41A	B				inaccessible	Q	Q			Q		Q							Q		Q	Q												
IR26MW46A	B	0810H057	03/05/08	0956		Q	Q	Q	Q			Q							Q															
IR26MW47A	B	0810D057	03/05/08	1055		Q	Q	Q	Q			Q							Q															
IR26MW48A	B	0810H056	03/05/08	0912		Q	Q	Q	Q			Q							Q															
IR26MW49A	B	0810D056	03/05/08	1002		Q	Q	Q	Q			Q							Q															
IR26MW50A	B	0810D055	03/05/08	0906		Q	Q	Q	Q			Q							Q															
IR28MW122A	C	0809H039	02/28/08	1252																							Q					Q		
IR28MW125A	C	0809H041	02/28/08	1415								Q							Q	Q							Q							
IR28MW136A	C	0810E065	03/06/08	1527								Q							Q								Q	Q						
IR28MW140F	C	0809H040	02/28/08	1331																							Q							
IR28MW150A	C	0809H046	02/29/08	1243																							Q							
IR28MW151A	C	0811E078	03/10/08	1411								Q							Q	Q	Q						Q	Q						
IR28MW155A	C	0809E028	02/28/08	1152																	Q	Q		Q			Q	Q						
IR28MW169A	C	0809E029	02/28/08	1233																							Q							
IR28MW171A	C	0808H017	02/21/08	1503																			Q	Q			Q							
IR28MW171B	C	0808H016	02/21/08	1420							Q																Q	Q					Q	
IR28MW172F	C	0808H004	02/19/08	1440																	Q	Q					Q							
IR28MW173B	C	0809D034	02/28/08	1439																							Q							
IR28MW188F	C	0809H045	02/29/08	1203																	Q	Q					Q							
IR28MW189F	C	0809H043	02/29/08	1048																							Q							

Table 4-2. Summary of groundwater sample information (January-March 2008).

Well ID	Parcel	Sample ID	Sample Date	Sample Time	Comments	Mercury-CLP	Metals-CLP	Pesticides and PCBs-CLP	SVOCs-CLP	VOCs-CLP	EPA160.1 TDS	EPA 160.2 TSS	EPA 1664 Oil and Grease	EPA300.0 Anions-Inorganics	EPA350.1 Nitrogen as Ammonia	EPA351.2 Nitrogen-Kjeldahl Total	EPA376.1 Sulfide	EPA6010B Dissolved Metals	EPA 7199 Hexavalent Chromium	EPA7470A Dissolved Mercury	EPA8015B Gas	EPA8015M Diesel or Motor Oil	EPA8081A Organochlorine Pesticides	EPA8082 PCBs	EPA8141A Organophosphorus Compounds and Pesticides	EPA8260B VOCs	EPA8270C SVOCs	EPA901.0 Cesium-137	EPA9010B Cyanide	EPA903.1 Radium-226	FPD-GC Organotins	SM2520B Salinity	
IR28MW190F	C	0811H080	03/11/08	1319																						Q							
IR28MW200A	C	0809P004	02/25/08	1202																						Q							
IR28MW201F	C	0808H008	02/20/08	1420																						Q							
IR28MW211F	C	0811H078	03/11/08	0910							Q									Q						Q							
IR28MW216F	C	0809H048	02/29/08	1432																Q						Q							
IR28MW217A	C	0808H003	02/19/08	1410																						Q							
IR28MW221A	C	0809H030	02/27/08	1330							Q															Q							Q
IR28MW221B	C	0809H032	02/27/08	1404							Q															Q							Q
IR28MW255F	C	0810H052	03/04/08	1236																						Q							
IR28MW268A	C	0810H051	03/04/08	1207																						Q							
IR28MW270A	C	0808E008	02/20/08	1536																						Q							
IR28MW272A	C	0808E007	02/20/08	1420																						Q							
IR28MW272F	C	0808E005	02/20/08	1329							Q															Q							Q
IR28MW287A	C	0810E064	03/06/08	1421																						Q							
IR28MW294A	C	0808H009	02/20/08	1505																						Q						Q	
IR28MW298A	C	0808E012	02/21/08	1358																						Q							
IR28MW299B	C	0810H070	03/06/08	1409																						Q							
IR28MW300F	C	0809H044	02/29/08	1120																						Q	Q						
IR28MW308A	C	0810E058	03/05/08	1542																						Q							
IR28MW309B	C	0809H033	02/27/08	1437																						Q							
IR28MW311A	C	0808D009	02/21/08	1527																						Q							
IR28MW312F	C	0808E013	02/21/08	1437																						Q	Q						
IR28MW315A	C	0808D005	02/20/08	1444							Q															Q							Q
IR28MW315B	C	0808D002	02/20/08	1049							Q															Q							Q
IR28MW315F	C	0808D003	02/20/08	1133							Q															Q							Q
IR28MW350F	C	0811E081	03/11/08	0859																						Q							
IR28MW352A	C	0808E014	02/21/08	1541																						Q							
IR28MW353A	C	0808E002	02/20/08	1048																						Q							
IR28MW353B	C	0808E004	02/20/08	1133							Q															Q	Q						Q
IR28MW355F	C	0811H079	03/11/08	1018																						Q							
IR28MW394A	C	0808H007	02/20/08	1258																	Q	Q				Q							
IR28MW394B	C	0808H006	02/20/08	1036																	Q	Q				Q							
IR28MW395F	C	0808H002	02/19/08	1329																						Q							

Table 4-2. Summary of groundwater sample information (January-March 2008).

Well ID	Parcel	Sample ID	Sample Date	Sample Time	Comments	Mercury-CLP	Metals-CLP	Pesticides and PCBs-CLP	SVOCs-CLP	VOCs-CLP	EPA160.1 TDS	EPA160.2 TSS	EPA1664 Oil and Grease	EPA300.0 Anions-Inorganics	EPA350.1 Nitrogen as Ammonia	EPA351.2 Nitrogen-Kjeldahl Total	EPA376.1 Sulfide	EPA6010B Dissolved Metals	EPA 7199 Hexavalent Chromium	EPA7470A Dissolved Mercury	EPA8015B Gas	EPA8015M Diesel or Motor Oil	EPA8081A Organochlorine Pesticides	EPA8082 PCBs	EPA8141A Organophosphorus Compounds and Pesticides	EPA8260B VOCs	EPA8270C SVOCs	EPA901.0 Cesium-137	EPA9010B Cyanide	EPA903.1 Radium-226	FPD-GC Organotins	SM2520B Salinity		
IR28MW396A	C	0809D043	02/29/08	1441																							Q							
IR28MW396B	C	0809D042	02/29/08	1406																							Q							
IR28MW397B	C	0810E061	03/06/08	1058																							Q	Q						
IR28MW398A	C	0810H068	03/06/08	1148																							Q							
IR28MW398B	C	0810H069	03/06/08	1212																							Q							
IR28MW399B	C	0809D035	02/28/08	1531																							Q							
IR28MW406	C	0809D029	02/27/08	1541																							Q							
IR28MW407	C	0809D027	02/27/08	1501																							Q							
IR29MW56F	C	0808H015	02/21/08	1301																	Q	Q					Q	Q					Q	
IR29MW58F	C	0809P014	02/28/08	1419																	Q	Q	Q				Q							
IR29MW59F	C	0808H013	02/21/08	1000																							Q						Q	
IR29MW72F	C	0809P013	02/28/08	1159								Q						Q	Q															
IR29MW85F	C	0809P015	02/28/08	1522								Q						Q					Q				Q							
IR30MW04F	C	0809P009	02/26/08	1157																							Q							
IR34MW36A	D	0810H066	03/06/08	0921								Q						Q	Q															
IR36MW09A	E	0809E037	02/29/08	1357																							Q							
IR36MW11A	E	0810H062	03/05/08	1343																							Q							
IR36MW120B	E	0810E074	03/07/08	1510																							A							
IR36MW121A	E	0810E073	03/07/08	1430																							A							
IR36MW122A	E	0809D014	02/25/08	1510																							Q							
IR36MW123B	E	0809D013	02/25/08	1414																							Q							
IR36MW127A	E	0809N004	02/25/08	1259																							Q							
IR36MW128A	E	0809N005	02/25/08	1359																							Q							
IR36MW129B	E	0809N006	02/25/08	1442																							Q							
IR36MW12A	E	0809E034	02/29/08	1002																	Q	Q					Q	Q						
IR36MW14A	E	0809E038	02/29/08	1436																							Q							
IR36MW16A	D	0809H038	02/28/08	1114																							Q							
IR36MW17A	E	0809E018	02/27/08	1105																							Q							
IR39MW21A	E				NAPL																Q	Q	Q				Q	Q						
IR39MW23A	E	0809E032	02/29/08	0927																									Q					
IR39MW33A	E	0809H037	02/28/08	1031								Q							Q															
IR39MW36A	E	0809H036	02/28/08	0945																							Q							
IR44MW08A	D	0809D037	02/29/08	0901																							Q							

Table 4-2. Summary of groundwater sample information (January-March 2008).

Well ID	Parcel	Sample ID	Sample Date	Sample Time	Comments	Mercury-CLP	Metals-CLP	Pesticides and PCBs-CLP	SVOCs-CLP	VOCs-CLP	EPA160.1 TDS	EPA160.2 TSS	EPA1664 Oil and Grease	EPA300.0 Anions-Inorganics	EPA350.1 Nitrogen as Ammonia	EPA351.2 Nitrogen-Kjeldahl Total	EPA376.1 Sulfide	EPA6010B Dissolved Metals	EPA 7199 Hexavalent Chromium	EPA7470A Dissolved Mercury	EPA8015B Gas	EPA8015M Diesel or Motor Oil	EPA8081A Organochlorine Pesticides	EPA8082 PCBs	EPA8141A Organophosphorus Compounds and Pesticides	EPA8260B VOCs	EPA8270C SVOCs	EPA901.0 Cesium-137	EPA9010B Cyanide	EPA903.1 Radium-226	FPD-GC Organotins	SM2520B Salinity		
IR46MW37A	B	0810D064	03/06/08	1108		Q	Q			Q		Q						Q		Q	Q													
IR56MW39A	E	0809P006	02/26/08	0854																	Q	Q					Q	Q						
IR58MW25F	C	0810D061	03/05/08	1545								Q						Q	Q								Q							
IR58MW26A	C	0810D060	03/05/08	1421																							Q							
IR58MW31A	C	0810H073	03/07/08	1104																	Q	Q	Q	Q			Q							
IR58MW31F	C	0810H075	03/07/08	1209																							Q							
IR58MW32B	C	0810D059	03/05/08	1338																				Q			Q							
IR58MW33B	C	0810H074	03/07/08	1141																							Q							
IR61MW05A	B	0811E083	03/11/08	1125		SA	SA			SA		SA							SA		SA	SA												
IR64MW05A	C	0810H050	03/04/08	1133																							Q						Q	
IR70MW04A	D	0809E035	02/29/08	1104																							Q							
IR70MW07A	D				inaccessible																						Q							
IR71MW03A	D	0809D041	02/29/08	1128																							Q	Q						
IR71MW04A	D	0809D039	02/29/08	0947							Q																Q							Q
IR71MW12B	D	0809D039	02/29/08	1036																							Q							
IR74MW01A	E	0809D032	02/28/08	1044																							Q							
IR75MW05B	NNP	0809H021	02/26/08	1401								Q	Q	Q	Q	Q	Q	Q		Q	Q	Q	Q	Q	Q	Q	Q	Q		Q				
IR76MW13A	NNP	0908D033	02/28/08	1337																							Q							
PA28P04A	C	0810E062	03/06/08	1135																							Q							
PA36MW01A	E	0811E082	03/11/08	1015																							A							
PA36MW02A	E	0810H063	03/05/08	1426								Q							Q	Q														
PA36MW04A	E	0810H053	03/04/08	1411																							Q							
PA36MW07A	E	0810H076	03/07/08	1400																							Q							
PA36MW08A	E				NAPL																						Q	Q						
PA50MW03A	C	0810H064	03/05/08	1457																							Q				Q		Q	
PA50MW07A	D	0811N018	03/10/08	1348								Q							Q		Q						Q							
UT03MW11A	B				inaccessible	SA	SA			SA		SA							SA		SA	SA												

Notes:
The analyses to be performed are as outlined in SAP Tables 7B-7M (TtEMI, 2004), SAP Addendum No. 1 (April 2007), and SAP addendum No. 2 (December 2007)

Abbreviations/Acronyms:

- A: Annual sampling frequency
- A2: SAP Addendum no. 2 (sampled one-time only for cyanide in accordance with SAP Addendum 2 dated December 2007).
- NAPL: Non-aqueous phase liquid
- PCB: Polychlorinated biphenyls
- Q: Quarterly sampling frequency
- SA: Semiannual sampling frequency; sampled in 1st and 3rd quarters
- SVOC: Semi-volatile organic compounds
- TDS: Total dissolved solids
- TSS: Total suspended solids
- VOC: Volatile organic compounds

Parcel:

- B+: Well is physically located in Parcel B, is assigned in the SAP to Parcel C, and is not assigned in the RAMP.
- C+: Well is physically located in Parcel C, is assigned in the SAP to Parcel C, and is assigned in the RAMP to Parcel B.
- NNP: Non-Navy Property, reported by SAP-assigned parcel

Table 4-3. Summary of quality control sample information (October – December 2007).

Well ID	Parcel	Sample ID	QC Type	Sample Date	Sample Time	Mercury-CLP	Metals-CLP	Pesticides and PCBs-CLP	SVOCs-CLP	VOCs-CLP	EPA160.1 TDS	EPA160.2 TSS	EPA1664 Oil and Grease	EPA300.0 Anions-Inorganics	EPA350.1 Nitrogen as Ammonia	EPA351.2 Nitrogen-Kjeldahl Total	EPA376.1 Sulfide	EPA6010B Dissolved Metals	EPA 7199 Hexavalent Chromium	EPA7470A Dissolved Mercury	EPA8015 Gas	EPA8015M Diesel or Motor Oil	EPA8081A Organochlorine Pesticides	EPA8082 PCBs	EPA8141A Organophosphorus Compounds and Pesticides	EPA8260B VOCs	EPA8270C SVOCs	EPA901.0 Cesium-137	EPA9010B Cyanide	EPA903.1 Radium-226	FPD-GC Organotins	SM2520B Salinity	EPA8015B Gasoline		
IR01MW48A	E-2	0740G015	FD	10/4/07	0951							X	X	X	X	X	X	X		X	X	X	X	X	X	X	X		X		X				
IR01MW63A	E-2	0740W027	FD	10/5/07	1018							X		X		X		X		X		X		X		X			X						
IR09MW35A	D	0741N008	FD	10/9/07	0941							X						X	X										X						
IR09MW37A	D	0742E030	EB	10/17/07	1310													X	X											X					
IR09P040A	D	0742D058	FD	10/15/07	1039							X						X	X										X						
IR10MW61A	B	0740H004	FD	10/1/07	1137																						X								
IR10MW79A	B	0740D005	FD	10/1/07	1459																						X								
IR25MW16A	C	0740D027	FD	10/5/07	1108																			X			X								
IR25MW61A2	B+	0740H007	FD	10/1/07	1422						X																X	X					X		
IR26MW46A	B	0741W047	FD	10/10/07	1155	X	X	X	X			X							X																
IR28MW171B	C	0740D029	FD	10/5/07	1327						X																X	X					X		
IR28MW200A	C	0741W041	FD	10/9/07	1318																						X								
IR28MW221B	C	0741N012	FD	10/9/07	1433						X																X						X		
IR28MW350F	C	0742G034	EB	10/18/07	1145																						X								
IR28MW399B	C	0740W031	FD	10/5/07	1428																						X								
IR28MW406	C	0741W050	FD	10/10/07	1449																						X								
IR36MW122A	E	0740D017	FD	10/3/07	1359																						X								
IR36MW129B	E	0740W010	FD	10/2/07	1435																						X								
IR36MW14A	E	0740G012	FD	10/3/07	1455																						X								
IR39MW23A	E	0740H023	FD	10/3/07	1429																							X							
IR58MW26A	C	0741G028	FD	10/10/07	0951																						X								
IR58MW31F	C	0741D044	FD	10/10/07	0942																						X								
IR71MW12B	D	0740H036	FD	10/5/07	1025																						X								
IR74MW01A	E	0740H030	FD	10/4/07	1457																						X								
TB	Not Assigned	0740D001	TB	10/1/07	0800																						X								
TB	Not Assigned	0740D006	TB	10/2/07	0800																						X							X	
TB	Not Assigned	0740D010	TB	10/3/07	0800																						X								
TB	Not Assigned	0740D019	TB	10/4/07	0800																						X								X
TB	Not Assigned	0740D025	TB	10/5/07	0800																						X								
TB	Not Assigned	0740G001	TB	10/1/07	0800					X																		X							
TB	Not Assigned	0740G005	TB	10/2/07	0800																							X							
TB	Not Assigned	0740G009	TB	10/3/07	0800																							X							
TB	Not Assigned	0740G013	TB	10/4/07	0800																							X							X
TB	Not Assigned	0740G018	TB	10/5/07	0800																							X							
TB	Not Assigned	0740H001	TB	10/1/07	0800																							X							
TB	Not Assigned	0740H009	TB	10/2/07	0800																							X							

Table 4-3. Summary of quality control sample information (October – December 2007).

Well ID	Parcel	Sample ID	QC Type	Sample Date	Sample Time	Mercury-CLP	Metals-CLP	Pesticides and PCBs-CLP	SVOCs-CLP	VOCs-CLP	EPA160.1 TDS	EPA160.2 TSS	EPA1664 Oil and Grease	EPA300.0 Anions-Inorganics	EPA350.1 Nitrogen as Ammonia	EPA351.2 Nitrogen-Kjeldahl Total	EPA376.1 Sulfide	EPA6010B Dissolved Metals	EPA 7199 Hexavalent Chromium	EPA7470A Dissolved Mercury	EPA8015 Gas	EPA8015M Diesel or Motor Oil	EPA8081A Organochlorine Pesticides	EPA8082 PCBs	EPA8141A Organophosphorus Compounds and Pesticides	EPA8260B VOCs	EPA8270C SVOCs	EPA901.0 Cesium-137	EPA9010B Cyanide	EPA903.1 Radium-226	FPD-GC Organotins	SM2520B Salinity	EPA8015B Gasoline		
TB	Not Assigned	0740H017	TB	10/3/07	0800																					X								X	
TB	Not Assigned	0740H024	TB	10/4/07	0800																					X								X	
TB	Not Assigned	0740H032	TB	10/5/07	0800																					X									
TB	Not Assigned	0740W001	TB	10/1/07	0800					X																	X								
TB	Not Assigned	0740W006	TB	10/2/07	0800																					X									
TB	Not Assigned	0740W012	TB	10/3/07	0800																					X								X	
TB	Not Assigned	0740W018	TB	10/4/07	0800																					X								X	
TB	Not Assigned	0740W024	TB	10/5/07	0800																					X								X	
TB	Not Assigned	0740X001	TB	10/2/07	1400					X																									
TB	Not Assigned	0740X002	TB	10/3/07	1331					X																								X	
TB	Not Assigned	0740X003	TB	10/4/07	1440																					X								X	
TB	Not Assigned	0740X004	TB	10/5/07	1424																					X								X	
TB	Not Assigned	0741D031	TB	10/8/07	0800																					X								X	
TB	Not Assigned	0741D036	TB	10/9/07	0800																					X								X	
TB	Not Assigned	0741D042	TB	10/10/07	0800																					X									
TB	Not Assigned	0741D047	TB	10/11/07	0800					X																								X	
TB	Not Assigned	0741D051	TB	10/12/07	0800																					X									
TB	Not Assigned	0741E001	TB	10/9/07	0800																					X									
TB	Not Assigned	0741E006	TB	10/10/07	0800																					X									
TB	Not Assigned	0741E010	TB	10/11/07	0800																					X								X	
TB	Not Assigned	0741E014	TB	10/12/07	0800																					X									
TB	Not Assigned	0741G021	TB	10/8/07	0800																					X								X	
TB	Not Assigned	0741G026	TB	10/10/07	0800																					X								X	
TB	Not Assigned	0741H041	TB	10/10/07	0800																					X									
TB	Not Assigned	0741N001	TB	10/8/07	0800																					X								X	
TB	Not Assigned	0741N006	TB	10/9/07	0800																					X									
TB	Not Assigned	0741N017	TB	10/11/07	0800																					X								X	
TB	Not Assigned	0741N022	TB	10/12/07	0800																					X									
TB	Not Assigned	0741W032	TB	10/8/07	0800																					X								X	
TB	Not Assigned	0741W038	TB	10/9/07	0800																					X									
TB	Not Assigned	0741W044	TB	10/10/07	0800																					X									
TB	Not Assigned	0741W051	TB	10/11/07	0800					X																									X
TB	Not Assigned	0741W057	TB	10/12/07	0800																					X									X
TB	Not Assigned	0741X005	TB	10/8/07	1400																					X									X
TB	Not Assigned	0741X006	TB	10/10/07	1550																					X									
TB	Not Assigned	0741X007	TB	10/11/07	1432					X																									X

Table 4-3. Summary of quality control sample information (October – December 2007).

Well ID	Parcel	Sample ID	QC Type	Sample Date	Sample Time	Mercury-CLP	Metals-CLP	Pesticides and PCBs-CLP	SVOCs-CLP	VOCs-CLP	EPA160.1 TDS	EPA160.2 TSS	EPA1664 Oil and Grease	EPA300.0 Anions-Inorganics	EPA350.1 Nitrogen as Ammonia	EPA351.2 Nitrogen-Kjeldahl Total	EPA376.1 Sulfide	EPA6010B Dissolved Metals	EPA 7199 Hexavalent Chromium	EPA7470A Dissolved Mercury	EPA8015 Gas	EPA8015M Diesel or Motor Oil	EPA8081A Organochlorine Pesticides	EPA8082 PCBs	EPA8141A Organophosphorus Compounds and Pesticides	EPA8260B VOCs	EPA8270C SVOCs	EPA901.0 Cesium-137	EPA9010B Cyanide	EPA903.1 Radium-226	FPD-GC Organotins	SM2520B Salinity	EPA8015B Gasoline	
TB	Not Assigned	0741X008	TB	10/12/07	1440																					X								
TB	Not Assigned	0742D059	TB	10/16/07	0800																					X								X
TB	Not Assigned	0742D067	TB	10/18/07	0800																					X								X
TB	Not Assigned	0742E018	TB	10/15/07	0800																					X								
TB	Not Assigned	0742E024	TB	10/16/07	0800																					X								X
TB	Not Assigned	0742E028	TB	10/17/07	0800																					X								X
TB	Not Assigned	0742G032	TB	10/18/07	0800																					X								
TB	Not Assigned	0742H045	TB	10/15/07	0800																					X								
TB	Not Assigned	0742H050	TB	10/16/07	0800																					X								
TB	Not Assigned	0742H052	TB	10/17/07	0800																					X								
TB	Not Assigned	0742H056	TB	10/18/07	0800																					X								
TB	Not Assigned	0742W061	TB	10/15/07	0800																					X								
TB	Not Assigned	0742W064	TB	10/16/07	0800																					X								
TB	Not Assigned	0742W069	TB	10/17/07	0800																					X								
TB	Not Assigned	0742X009	TB	10/15/07	1500																					X								
TB	Not Assigned	0742X010	TB	10/16/07	1530																					X								X
TB	Not Assigned	0742X011	TB	10/17/07	1500																					X								X
TB	Not Assigned	0742X012	TB	10/18/07	1330																					X								X

Notes:

Abbreviations/Acronyms:

EB: Equipment Blank (rinsate)
FD: Field duplicate sample
PCB: Polychlorinated biphenyl
SVOC: Semi-volatile organic compound
TB: Trip blank sample
TDS: Total dissolved solids
TSS: Total suspended solids
VOCs: Volatile organic compounds

Parcel:

B+: Well is physically located in Parcel B, is assigned in the SAP to Parcel C, and is not assigned in the RAMP.

This page left blank intentionally

Table 4-4. Summary of quality control sample information (January – March 2008).

Well ID	Parcel	Sample ID	QC Type	Sample Date	Sample Time	Mercury-CLP	Metals-CLP	Pesticides and PCBs-CLP	SVOCs-CLP	VOCs-CLP	EPA160.1 TDS	EPA160.2 TSS	EPA1664 Oil and Grease	EPA300.0 Anions-Inorganics	EPA350.1 Nitrogen as Ammonia	EPA351.2 Nitrogen-Kjeldahl Total	EPA376.1 Sulfide	EPA6010B Dissolved Metals	EPA 7199 Hexavalent Chromium	EPA7470A Dissolved Mercury	EPA8015M Diesel or Motor Oil	EPA8081A Organochlorine Pesticides	EPA8082 PCBs	EPA8141A Organophosphorus Compounds and Pesticides	EPA8260B VOCs	EPA8270C SVOCs	EPA9010B Cyanide	FPD-GC Organotins	SM2520B Salinity	EPA8015B Gasoline
IR01MW62A	E-2	0809D026	FD	02/27/08	1402						X							X		X					X	X	X			
IR03MW373B	E	0809E021	FD	02/27/08	1351						X							X		X	X	X	X		X	X				X
IR10MW80A	B	0810E048	FD	03/03/08	1529													X							X					
IR10MW81A	B	0810H061	FD	03/05/08	1206						X							X	X						X					
IR15MW06A	D	0809H028	FD	02/27/08	1039																				X					
IR22MW07A	D	0810E072	EB	03/07/08	1335																						X			
IR25MW40A	C	0810E044	FD	03/03/08	1323																				X					
IR26MW47A	B	0810D058	FD	03/05/08	1100	X	X	X	X		X								X											
IR28MW221A	C	0809H031	FD	02/27/08	1335						X														X					
IR28MW272F	C	0808E006	FD	02/20/08	1334						X														X					
IR28MW294A	C	0808H010	FD	02/20/08	1510																				X				X	
IR28MW315F	C	0808D004	FD	02/20/08	1138						X														X					X
IR28MW353A	C	0808E003	FD	02/20/08	1051																				X					
IR38MW407	C	0809D028	FD	02/27/08	1506																				X					
IR29MW59F	C	0808H014	FD	02/21/08	1005																				X			X		
IR30MW04F	C	0809P010	FD	02/26/08	1202																				X					
IR34MW36A	D	0810H067	FD	03/06/08	0926						X							X	X											
IR36MW122A	E	0809D015	FD	02/25/08	1515																				X					
IR36MW17A	E	0809E019	FD	02/27/08	1110																	X			X					
IR39MW23A	E	0809E033	FD	02/29/08	0932																					X				
IR61MW05A	B	0811E084	EB	03/11/08	1200	X	X			X	X								X		X									X
IR71MW12B	D	0809D040	FD	02/29/08	1041																				X					
IR75MW05B	NNP	0809H022	FD	02/26/08	1406						X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X		X
TB	Not Assigned	0808H001	TB	02/19/08	0800																				X					X
TB	Not Assigned	0808D001	TB	02/20/08	0800																				X					
TB	Not Assigned	0808E001	TB	02/20/08	0800																				X					
TB	Not Assigned	0808H005	TB	02/20/08	0800																				X					X
TB	Not Assigned	0808X001	TB	02/20/08	1400																				X					X
TB	Not Assigned	0808D006	TB	02/21/08	0800																				X					
TB	Not Assigned	0808E009	TB	02/21/08	0800																				X					X
TB	Not Assigned	0808H011	TB	02/21/08	0800																				X					X
TB	Not Assigned	0808X002	TB	02/21/08	1516																				X					X
TB	Not Assigned	0809D010	TB	02/25/08	0800																				X					X
TB	Not Assigned	0809N001	TB	02/25/08	0800																				X					X
TB	Not Assigned	0809P001	TB	02/25/08	0800																				X					X
TB	Not Assigned	0809X003	TB	02/25/08	1400																				X					X

Table 4-4. Summary of quality control sample information (January – March 2008).

Well ID	Parcel	Sample ID	QC Type	Sample Date	Sample Time	Mercury-CLP	Metals-CLP	Pesticides and PCBs-CLP	SVOCs-CLP	VOCs-CLP	EPA160.1 TDS	EPA160.2 TSS	EPA1664 Oil and Grease	EPA300.0 Anions-Inorganics	EPA350.1 Nitrogen as Ammonia	EPA351.2 Nitrogen-Kjeldahl Total	EPA376.1 Sulfide	EPA6010B Dissolved Metals	EPA 7199 Hexavalent Chromium	EPA7470A Dissolved Mercury	EPA8015M Diesel or Motor Oil	EPA8081A Organochlorine Pesticides	EPA8082 PCBs	EPA8141A Organophosphorus Compounds and Pesticides	EPA8260B VOCs	EPA8270C SVOCs	EPA9010B Cyanide	FPD-GC Organotins	SM2520B Salinity	EPA8015B Gasoline
TB	Not Assigned	0809D016	TB	02/26/08	0800																				X					X
TB	Not Assigned	0809H018	TB	02/26/08	0800																				X					
TB	Not Assigned	0809P005	TB	02/26/08	0800																				X					X
TB	Not Assigned	0809X004	TB	02/26/08	1300																				X					X
TB	Not Assigned	0809D022	TB	02/27/08	0800																				X					X
TB	Not Assigned	0809E015	TB	02/27/08	0800																				X					X
TB	Not Assigned	0809H024	TB	02/27/08	0800																				X					X
TB	Not Assigned	0809X005	TB	02/27/08	1442																				X					X
TB	Not Assigned	0809D030	TB	02/28/08	0800																				X					
TB	Not Assigned	0809E023	TB	02/28/08	0800																				X					X
TB	Not Assigned	0809H034	TB	02/28/08	0800																				X					
TB	Not Assigned	0809P012	TB	02/28/08	0800																				X					X
TB	Not Assigned	0809X006	TB	02/28/08	1515																				X					X
TB	Not Assigned	0809D036	TB	02/29/08	0800																				X					
TB	Not Assigned	0809E030	TB	02/29/08	0800																				X					X
TB	Not Assigned	0809H042	TB	02/29/08	0800																				X					X
TB	Not Assigned	0809X007	TB	02/29/08	1500																				X					X
TB	Not Assigned	0810D044	TB	03/03/08	0800					X																				X
TB	Not Assigned	0810E039	TB	03/03/08	0800					X																				X
TB	Not Assigned	0810N007	TB	03/03/08	0800					X																				X
TB	Not Assigned	0810X008	TB	03/03/08	1520					X																				X
TB	Not Assigned	0810D049	TB	03/04/08	0800																				X					X
TB	Not Assigned	0810E050	TB	03/04/08	0800					X																				X
TB	Not Assigned	0810G001	TB	03/04/08	0800																				X					
TB	Not Assigned	0810H049	TB	03/04/08	0800																				X					
TB	Not Assigned	0810X009	TB	03/04/08	1431					X																				X
TB	Not Assigned	0810D054	TB	03/05/08	0800																				X					
TB	Not Assigned	0810E054	TB	03/05/08	0800					X																				X
TB	Not Assigned	0810H055	TB	03/05/08	0800					X																				X
TB	Not Assigned	0810X010	TB	03/05/08	1427					X																				X
TB	Not Assigned	0810D062	TB	03/06/08	0800					X																				X
TB	Not Assigned	0810E059	TB	03/06/08	0800																				X					
TB	Not Assigned	0810H065	TB	03/06/08	0800																				X					
TB	Not Assigned	0810X011	TB	03/06/08	1300					X																				X
TB	Not Assigned	0810E066	TB	03/07/08	0800																				X					
TB	Not Assigned	0810H072	TB	03/07/08	0800																				X					X

Table 4-4. Summary of quality control sample information (January – March 2008).

Well ID	Parcel	Sample ID	QC Type	Sample Date	Sample Time	Mercury-CLP	Metals-CLP	Pesticides and PCBs-CLP	SVOCs-CLP	VOCs-CLP	EPA160.1 TDS	EPA160.2 TSS	EPA1664 Oil and Grease	EPA300.0 Anions-Inorganics	EPA350.1 Nitrogen as Ammonia	EPA351.2 Nitrogen-Kjeldahl Total	EPA376.1 Sulfide	EPA6010B Dissolved Metals	EPA 7199 Hexavalent Chromium	EPA7470A Dissolved Mercury	EPA8015M Diesel or Motor Oil	EPA8081A Organochlorine Pesticides	EPA8082 PCBs	EPA8141A Organophosphorus Compounds and Pesticides	EPA8260B VOCs	EPA8270C SVOCs	EPA9010B Cyanide	FPD-GC Organotins	SM2520B Salinity	EPA8015B Gasoline
TB	Not Assigned	0810X012	TB	03/07/08	1520																				X					X
TB	Not Assigned	0811E075	TB	03/10/08	0800																				X					
TB	Not Assigned	0811N014	TB	03/10/08	0800					X																				
TB	Not Assigned	0811X013	TB	03/10/08	1530																				X					
TB	Not Assigned	0811E080	TB	03/11/08	0800					X																				X
TB	Not Assigned	0811H077	TB	03/11/08	0800																				X					
TB	Not Assigned	0811D067	TB	03/12/08	0800					X																				X
TB	Not Assigned	0811X014	TB	03/12/08	1430					X																				X

Notes:

Abbreviations/Acronyms:
EB: Equipment Blank (rinsate)
FD: Field duplicate sample
PCB: Polychlorinated biphenyl
SVOC: Semi-volatile organic compound
TB: Trip blank sample
TDS: Total dissolved solids
TSS: Total suspended solids
VOCs: Volatile organic compounds

Parcel:

NNP: Non-Navy Property

This page left blank intentionally

Table 4-5. Parcel B trigger level criteria for each RAMP monitoring well type.

Monitoring Well Type	Trigger Levels
POC	NAWQC or HGALs, whichever is higher, or the lowest attainable laboratory quantitation limit, if that is higher. TPH trigger levels from the petroleum hydrocarbons Corrective Action Plan (AFA Construction, Inc., 1997)
Sentinel	Ten times the trigger levels for POC monitoring wells
Post-Remedial Action	Same as the trigger levels for POC monitoring wells
VOC	For vinyl chloride, same as the trigger levels for POC monitoring wells For TCE and cis-1,2-DCE, 10 times the trigger levels for POC monitoring wells or measured increase in vinyl chloride Inhalation trigger levels for monitoring well inside building
On- and Off-site Migration	Well IR07MW28A: same as POC well trigger levels Well IR18MW21A: 10 times POC well trigger levels
Utility Line	Southeast Water Pollution Control Plant discharge requirements

Notes:

Acronyms/Abbreviations

DCE: Dichloroethene
HGAL: Hunters Point groundwater ambient level (PRC, 1996)
NAWQC: National Ambient Water Quality Criteria (TtEMI, 1999)
POC: Point-of-compliance
RAMP: Remedial Action Monitoring Plan
TCE: Trichloroethene
TPH: Total petroleum hydrocarbons
VOC: Volatile organic compound

Sources

AFA Construction, Inc. 1997. "Draft Petroleum Hydrocarbon Corrective Action Plan, Hunters Point Shipyard (HPS), San Francisco, California." November 4.
PRC 1996. "Estimation of Hunters Point Shipyard Groundwater Ambient Technical Memorandum," September 16.
TtEMI 1999. "Final Remedial Action Monitoring Plan, Parcel B, Hunters Point Shipyard, San Francisco, California." July 2.

This page left blank intentionally

Table 4-6. Parcel B proposed trigger level criteria for non-RAMP monitoring wells.

Monitoring Well	Chemical	Trigger Level ^a (µg/L)	Reference
IR10MW12A ^b (hexavalent chromium well)	Hexavalent chromium	50	NAWQC
IR26MW46A, IR26MW47A, IR26MW48A (Supplemental Characterization wells)	Aroclor-1260	0.20	Analytical QL
	Arsenic	36	NAWQC
	Chlordane ^c	0.01	Analytical QL
	Copper	28.0	HGAL
	Chromium (total)	1,030	NAWQC
	Hexavalent chromium	50	NAWQC
	Lead	14.4	HGAL
	Manganese	8,140	HGAL
	Mercury	0.60	HGAL
	Zinc	81	NAWQC
	Benzo(a)anthracene	300	NAWQC
	Benzo(a)pyrene	300	NAWQC
	Benzo(b)fluoranthene	300	NAWQC
	Benzo(k)fluoranthene	300	NAWQC
	Chrysene	300	NAWQC
	Dibenzo(a,h)anthracene	300	NAWQC
	Indeno(1,2,3-cd)pyrene	300	NAWQC

Notes

- a Action and screening levels are the higher of the applicable NAWQC for exposure of aquatic organisms (if no criterion for chronic exposure is available, 1/10th of the criterion for acute exposure is used) or the HGAL, unless otherwise specified.
- b A significant increase in vinyl chloride concentrations at this well will result in notification of the Base Realignment and Closure Cleanup Team.
- c No criteria for chlordane were noted in the Remedial Action Monitoring Plan or the Record of Decision (TtEMI, 1999, 1997).

Acronyms/Abbreviations

µg/L: Microgram per liter
 HGAL: Hunters Point groundwater ambient level (PRC, 1996); (TtEMI, 1997)
 IR: Installation Restoration
 NAWQC: National Ambient Water Quality Criteria (TtEMI, 1999)
 QL: Quantitation limit

Sources

PRC, 1996. "Estimation of Hunters Point Shipyard Groundwater Ambient Technical Memorandum." September 16.
 TtEMI 1997. "Final Record of Decision, Parcel B, Hunters Point Shipyard, San Francisco, California." October 9.
 TtEMI 1999. "Final Remedial Action Monitoring Plan, Parcel B, Hunters Point Shipyard, San Francisco, California." July 2.

This page left blank intentionally

Table 4-7. Numerical Parcel B trigger levels.

Analyte	POC Well Trigger Level (µg/L) ^a	Sentinel Well Trigger Level (µg/L) ^b	VOC Well Trigger Level (µg/L) ^c	Utility Line Well Trigger Level (µg/L) ^d	HGAL (µg/L) ^e	NAWQC (µg/L) ^e	Parcel B ROD Trigger Level (µg/L) ^f
TPH-D and TPH-G ^g	NT	NT	NT	NT	NA	NA	NT
PAHs	300	3,000	NT	NT	NA	300	NL
PCBs ^h	0.19	1.9	NT	5,000 ⁱ	NA	0.1 ^j	NL
1,2-Dichloroethene	85 ^k	85 ^k	85	NT	NA	224,000	85 ^l
Trichloroethene	114 ^m	114 ^m	114	NT	NA	2,000 ⁿ	114 ^l
Vinyl Chloride	55	55 ^o	55	200	NA	55 ^p	55 ^l
Antimony	500	5,000	NT	15,000 ⁱ	43.3	500	500
Arsenic	36	360	NT	4,000	27.3	36	NL
Barium	504	5,040	NT	100,000 ⁱ	504	NA	5,000
Beryllium	1.4	14	NT	750 ⁱ	1.4	NA	1.4
Cadmium	9.3	93	NT	500	5.08	9.3	9.3
Chromium	15.7	157	NT	5,000	15.7	10,300	1,030 ^q
Hexavalent Chromium	NT	NT	NT	5,000 ⁱ	NA	50	50
Cobalt	20.8	208	NT	80,000 ⁱ	20.8	NA	NL
Copper	28	280	NT	4,000	28	2.4	28
Lead	14.4	144	NT	1,500	14.4	8.1	14.4
Manganese	8,140	81,400	NT	NT	8,140	NT	8,140
Mercury	0.6	6	NT	50	0.60	0.03	0.6
Nickel	96.5	965	NT	2,000	96.5	8.2	96.5
Silver	7.43	74.3	NT	600	7.43	0.92	7.43
Thallium	13	130	NT	7,000 ⁱ	13	2,130	213
Zinc	81	810	NT	7,000	75.7	81	75.7

Notes

- a: POC well trigger levels are based on the HGAL or the NAWQC, whichever is higher, unless otherwise noted (TtEMI, 1999). POC well trigger levels apply to POC wells, Post-Remedial action wells, and On- and Off-site Migration well IR07MW28A (TtEMI, 1999).
- b: Sentinel well trigger levels are 10 times the POC well trigger levels, unless otherwise noted (TtEMI, 1999). Sentinel well trigger levels apply to sentinel wells and on- and off-site migration well IR18MW21A (TtEMI, 1999).
- c: VOC well trigger levels are based on concentrations exceeding numerical criteria or exhibit a measured increase in the concentration of vinyl chloride, whichever occurs first.
- d: Utility Line well trigger levels are based on Southeast Water Pollution Control Plant discharge requirements (TtEMI, 1999).

- e: Concentrations are listed as reported in Table 5 of the final Parcel B RAMP (TtEMI, 1999), except for 1,2-dichloroethene, trichloroethene, chromium, and thallium. The NAWQCs listed in the 1999 RAMP for 1,2-dichloroethene, trichloroethene, chromium, and thallium were 1/10th the acute exposures; the **are the only NAWQCs** applicable, those for acute exposure. The value listed for hexavalent chromium is from Table 10 of the final Parcel B ROD (TtEMI, 1997).
- f: Concentrations are listed as reported in Table 10 of the final Parcel B ROD (TtEMI, 1997).
- g: TPH is not a Comprehensive Environmental Response, Compensation, and Liability Act contaminant. A trigger level of 1,250 µg/L was included in the RAMP for screening purposes (TtEMI, 1999). The trigger level specified in the TPH Corrective Action Plan for Parcel B (TtEMI, 2001) is 1,400 µg/L at the shoreline, increasing to 20,000 µg/L at a distance of 250 feet inland.
- h: PCBs with applicable trigger levels include Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, and Aroclor-1260. Note that if the lowest attainable laboratory quantitation limit (QL) is higher than the trigger level (as for the POC wells and one of the migration wells), the QL is used as the trigger level.
- i: Soluble Threshold Limit Concentration, California Code of Regulations, Title 22, Section 66261.24(a)(2)(A) (TtEMI, 1999).
- j: Great Lakes Water Quality Initiative Tier II level criterion for PCBs (TtEMI, 1999).
- k: POC and sentinel well trigger levels for 1,2-dichloroethene were reduced from 22,400 and 224,000 µg/L, respectively, as listed in the Parcel B RAMP (TtEMI, 1999), to a trigger level of 85 µg/L for both wells, since 1,2-dichloroethene criteria are based on human health.
- l: Human health-based criteria were developed for VOCs that may represent a human health risk to a future resident at Parcel B. Concentrations of these VOCs in groundwater correspond with an excess lifetime cancer risk of 10⁻⁶ and were selected as a groundwater remedial action objective for protection of human health based on groundwater-to-indoor-air modeling analysis (TtEMI, 1997).
- m: POC and sentinel well trigger levels for trichloroethene were reduced from 200 and 2,000 µg/L, respectively, as listed in the Parcel B RAMP (TtEMI, 1999), to a trigger level of 114 µg/L for both wells, since trichloroethene criteria are based on human health.
- n: NAWQC for trichloroethene is 1/10th acute exposures based on additional toxicity information for aquatic life (TtEMI, 1999).
- o: The sentinel well trigger level for vinyl chloride was reduced from 550 µg/L, as listed in the Parcel B RAMP (TtEMI, 1999), to 55 µg/L, since the vinyl chloride criterion is based on human health.
- p: Because no NAWQC have been specified for vinyl chloride, a concentration of 55 µg/L was used based on the human health risk assessment for VOCs (TtEMI, 1999).
- q: The ROD trigger level is for chromium III, no ROD trigger level has been established for total chromium (chromium III plus chromium VI).

Acronyms/Abbreviations

µg/L: Microgram per liter
HGAL: Hunters Point groundwater ambient level
NA: Not available
NAWQC: National Ambient Water Quality Criteria
NL: No trigger specified in ROD (TtEMI, 1997)
NT: No trigger specified in RAMP (TtEMI, 1999)
PAH: Polynuclear aromatic hydrocarbon
PCB: Polychlorinated biphenyl
POC: Point-of-compliance
RAMP: Remedial Action Monitoring Plan
ROD: Record of Decision
TtEMI: Tetra Tech EM Inc.

TPH-d: Total petroleum hydrocarbons as diesel
TPH-g: Total petroleum hydrocarbons as gasoline
VOC: Volatile organic compound

Table 4-8. Exceedances of water quality criteria (October – December 2007).

Well ID	Parcel	Area of Concern	Analyte	Result (ug/L)	Validation Qualifier	Fed MCL (ug/L)	Cal MCL (ug/L)	HGAL (ug/L)	NAWQC (ug/L)
IR04MW13A	E-2	ILA	1,1-Dichloroethane	48			5	NL	NL
IR04MW13A	E-2	ILA	1,1-Dichloroethene	61		7	6	NL	22,400
IR01MW60A	E-2	ILA	1,4-Dichlorobenzene	9.5	J	75	5	NL	129
IR01MW60A	E-2	ILA	1,4-Dichlorobenzene	14		75	5	NL	129
IR01MW64A	E-2	ILA	1,4-Dichlorobenzene	5.9		75	5	NL	129
IR01MW64A	E-2	ILA	1,4-Dichlorobenzene	5.9	J	75	5	NL	129
IR28MW407	C	RU-C4	1,4-Dichlorobenzene	11		75	5	NL	129
IR58MW31A	C	RU-C2	1,4-Dichlorobenzene	71		75	5	NL	129
IR58MW32B	C	RU-C2	1,4-Dichlorobenzene	8.4		75	5	NL	129
IR03MW218A2	E	ORPA	2-Methylnaphthalene	43		NL	NL	NL	30
IR01MW03A	NNP	ILA	Ammonia (as N)	1,100		NL	NL	NL	35
IR01MW05A	NNP	ILA	Ammonia (as N)	4,000		NL	NL	NL	35
IR01MW09B	E-2	ILA	Ammonia (as N)	1,400		NL	NL	NL	35
IR01MW10A	E-2	ILA	Ammonia (as N)	820		NL	NL	NL	35
IR01MW26B	E-2	ILA	Ammonia (as N)	5,700		NL	NL	NL	35
IR01MW31A	E-2	ILA	Ammonia (as N)	3,200		NL	NL	NL	35
IR01MW366B	E-2	ILA	Ammonia (as N)	2,600		NL	NL	NL	35
IR01MW38A	E-2	ILA	Ammonia (as N)	16,200		NL	NL	NL	35
IR01MW403A	NNP	ILA	Ammonia (as N)	1,600		NL	NL	NL	35
IR01MW403B	E-2	ILA	Ammonia (as N)	180	J	NL	NL	NL	35
IR01MW42A	E-2	ILA	Ammonia (as N)	3,400		NL	NL	NL	35
IR01MW48A	E-2	ILA	Ammonia (as N)	20,500		NL	NL	NL	35
IR01MW60A	E-2	ILA	Ammonia (as N)	7,500		NL	NL	NL	35
IR01MW64A	E-2	ILA	Ammonia (as N)	4,300		NL	NL	NL	35
IR01MWLF1A	E-2	ILA	Ammonia (as N)	5,300		NL	NL	NL	35
IR01MWLF2A	E-2	ILA	Ammonia (as N)	2,100		NL	NL	NL	35
IR01MWLF4B	E-2	ILA	Ammonia (as N)	4,300		NL	NL	NL	35
IR04MW13A	E-2	ILA	Ammonia (as N)	470		NL	NL	NL	35
IR04MW36A	E-2	ILA	Ammonia (as N)	320	J	NL	NL	NL	35

Table 4-8. Exceedances of water quality criteria (October – December 2007).

Well ID	Parcel	Area of Concern	Analyte	Result (ug/L)	Validation Qualifier	Fed MCL (ug/L)	Cal MCL (ug/L)	HGAL (ug/L)	NAWQC (ug/L)
IR75MW05B	NNP	ILA	Ammonia (as N)	290	J	NL	NL	NL	35
IR01MW26B	E-2	ILA	Antimony	11.1		6	6	43.26	NL
IR01MW38A	E-2	ILA	Antimony	7.0		6	6	43.26	NL
IR02MW126A	E	NBFA	Antimony	8.8		6	6	43.26	NL
IR02MW147A	E	NBFA	Antimony	6.8		6	6	43.26	NL
IR02MWB-1	E	ORPA	Antimony	34.9		6	6	43.26	NL
IR03MW224A	E	ORPA	Antimony	6.1		6	6	43.26	NL
PA50MW07A	D	IR-32	Antimony	14.2		6	6	43.26	NL
IR01MW366B	E-2	ILA	Arsenic	11.4		10	50	27.34	36
IR01MWLF1A	E-2	ILA	Arsenic	11.1		10	50	27.34	36
IR04MW36A	E-2	ILA	Arsenic	240		10	50	27.34	36
IR01MW05A	NNP	ILA	Barium	529	J	2,000	1,000	504	NL
IR01MW38A	E-2	ILA	Barium	988		2,000	1,000	504	NL
IR01MW42A	E-2	ILA	Barium	750	J	2,000	1,000	504	NL
IR01MW48A	E-2	ILA	Barium	1030		2,000	1,000	504	NL
IR01MW60A	E-2	ILA	Barium	633	J	2,000	1,000	504	NL
IR01MW62A	E-2	ILA	Barium	1,480	J	2,000	1,000	504	NL
IR02MW126A	E	NBFA	Barium	732		2,000	1,000	504	NL
IR03MW218A2	E	ORPA	Barium	3,480	J	2,000	1,000	504	NL
IR03MW342A	E	ORPA	Barium	1,010	J	2,000	1,000	504	NL
IR39MW33A	E	IR-39	Barium	2,300	J	2,000	1,000	504	NL
IR01MW05A	NNP	ILA	Benzene	1.4		5	1	NL	510
IR01MW48A	E-2	ILA	Benzene	1.8		5	1	NL	510
IR01MW60A	E-2	ILA	Benzene	2.6		5	1	NL	510
IR01MW64A	E-2	ILA	Benzene	4.2		5	1	NL	510
IR03MW218A2	E	ORPA	Benzene	11		5	1	NL	510
IR03MW342A	E	ORPA	Benzene	4.0		5	1	NL	510
IR06MW59A1	C	RU-C5	Benzene	1.4		5	1	NL	510
IR28MW136A	C	RU-C1	Benzene	2.0		5	1	NL	510

Table 4-8. Exceedances of water quality criteria (October – December 2007).

Well ID	Parcel	Area of Concern	Analyte	Result (ug/L)	Validation Qualifier	Fed MCL (ug/L)	Cal MCL (ug/L)	HGAL (ug/L)	NAWQC (ug/L)
IR28MW211F	C	RU-C4	Benzene	1.2	J	5	1	NL	510
IR58MW31A	C	RU-C2	Benzene	7.6		5	1	NL	510
IR06MW54F	C	RU-C5	Carbon Tetrachloride	4.8		5	0.5	NL	6,400
IR28MW188F	C	IR-28	Carbon Tetrachloride	28		5	0.5	NL	6,400
IR28MW190F	C	RU-C2	Carbon Tetrachloride	31		5	0.5	NL	6,400
IR28MW272F	C	RU-C4	Carbon Tetrachloride	1.0	J	5	0.5	NL	6,400
IR28MW300F	C	RU-C2	Carbon Tetrachloride	11		5	0.5	NL	6,400
IR28MW315F	C	RU-C4	Carbon Tetrachloride	0.67		5	0.5	NL	6,400
IR28MW397B	C	RU-C2	Carbon Tetrachloride	7.3	J	5	0.5	NL	6,400
IR28MW406	C	RU-C4	Carbon Tetrachloride	1.4		5	0.5	NL	6,400
IR58MW31F	C	RU-C2	Carbon Tetrachloride	1.1		5	0.5	NL	6,400
IR01MW60A	E-2	ILA	Chlorobenzene (MCB)	79		100	70	NL	129
IR58MW31A	C	RU-C2	Chlorobenzene (MCB)	690		100	70	NL	129
IR01MW60A	E-2	ILA	Chlorpyrifos	0.26	J	NL	NL	NL	0.0056
IR06MW54F	C	RU-C5	Chromium	80.3	J	100	50	15.66	1,030
IR09MW35A	D	IR-09	Chromium	47.5		100	50	15.66	1,030
IR09MW37A	D	IR-09	Chromium	39.2		100	50	15.66	1,030
IR09MW62A	D	IR-09	Chromium	25.5		100	50	15.66	1,030
IR09MW63A	D	IR-09	Chromium	65.7		100	50	15.66	1,030
IR28MW125A	C	RU-C1	Chromium	145	J	100	50	15.66	1,030
IR58MW25F	C	RU-C2	Chromium	67	J	100	50	15.66	1,030
PA50MW12A	D	Parcel D	Chromium	43		100	50	15.66	1,030
IR04MW13A	E-2	ILA	cis-1,2-DCE	40		70	6	NL	22,400
IR06MW35A	C	RU-C5	cis-1,2-DCE	9.2		70	6	NL	22,400
IR06MW59A1	C	RU-C5	cis-1,2-DCE	82		70	6	NL	22,400
IR10MW13A1	B	IR-10	cis-1,2-DCE	13		70	6	NL	22,400
IR10MW33A	B	IR-10	cis-1,2-DCE	19		70	6	NL	22,400
IR10MW59A	B	IR-10	cis-1,2-DCE	93		70	6	NL	22,400
IR10MW61A	B	IR-10	cis-1,2-DCE	9.8		70	6	NL	22,400

Table 4-8. Exceedances of water quality criteria (October – December 2007).

Well ID	Parcel	Area of Concern	Analyte	Result (ug/L)	Validation Qualifier	Fed MCL (ug/L)	Cal MCL (ug/L)	HGAL (ug/L)	NAWQC (ug/L)
IR25MW16A	C	RU-C5	cis-1,2-DCE	110		70	6	NL	22,400
IR28MW136A	C	RU-C1	cis-1,2-DCE	42		70	6	NL	22,400
IR28MW151A	C	RU-C1	cis-1,2-DCE	32		70	6	NL	22,400
IR28MW211F	C	RU-C4	cis-1,2-DCE	62	J	70	6	NL	22,400
IR28MW216F	C	RU-C2	cis-1,2-DCE	8.0	J	70	6	NL	22,400
IR28MW406	C	RU-C4	cis-1,2-DCE	35		70	6	NL	22,400
IR58MW33B	C	RU-C2	cis-1,2-DCE	19		70	6	NL	22,400
IR01MW53B	E-2	ILA	Copper	5.2		1,300	1,300	28	3.1
IR02MW126A	E	NBFA	Copper	21.6		1,300	1,300	28	3.1
IR01MW38A	E-2	ILA	Cyanide	8.5	J	200	150	NL	1
IR01MW403B	E-2	ILA	Cyanide	5.8	J	200	150	NL	1
IR01MW48A	E-2	ILA	Cyanide	9.1	J	200	150	NL	1
IR01MW62A	E-2	ILA	Cyanide	8.2	J	200	150	NL	1
IR01MW63A	E-2	ILA	Cyanide	12.2		200	150	NL	1
IR01MWLF1A	E-2	ILA	Cyanide	23.2		200	150	NL	1
IR01MWLF2A	E-2	ILA	Cyanide	5.8	J	200	150	NL	1
IR01MW403B	E-2	ILA	Freon 150	1.8		5	0.5	NL	11,300
IR04MW13A	E-2	ILA	Freon 150	1.8		5	0.5	NL	11,300
IR28MW211F	C	RU-C4	Freon 150	21	J	5	0.5	NL	11,300
IR28MW407	C	RU-C4	Freon 150	7.7		5	0.5	NL	11,300
IR06MW54F	C	RU-C5	Hexavalent chromium	69.5		NL	NL	NL	50
IR09MW63A	D	IR-09	Hexavalent chromium	64.5		NL	NL	NL	50
IR28MW125A	C	RU-C1	Hexavalent chromium	141		NL	NL	NL	50
IR58MW25F	C	RU-C2	Hexavalent chromium	58.4		NL	NL	NL	50
IR07MW20A1	B	IR-07	Lead	10.4	J	15	15	14.44	8.1
IR07MW26A	B	IR-07	Lead	17.5	J	15	15	14.44	8.1
IR07MWS-2	B	IR-07	Lead	10.9	J	15	15	14.44	8.1
IR26MW47A	B	EE-05	Lead	10.1	J	15	15	14.44	8.1
IR26MW48A	B	EE-05	Lead	11.2	J	15	15	14.44	8.1

Table 4-8. Exceedances of water quality criteria (October – December 2007).

Well ID	Parcel	Area of Concern	Analyte	Result (ug/L)	Validation Qualifier	Fed MCL (ug/L)	Cal MCL (ug/L)	HGAL (ug/L)	NAWQC (ug/L)
IR26MW49A	B	EE-05	Lead	13.9	J	15	15	14.44	8.1
IR26MW47A	B	EE-05	Mercury	3.1		2	2	0.6	0.94
IR26MW49A	B	EE-05	Mercury	2.4		2	2	0.6	0.94
IR01MW05A	NNP	ILA	Nickel	44.8		NL	100	96.5	8.2
IR01MW10A	E-2	ILA	Nickel	26.9		NL	100	96.5	8.2
IR01MW42A	E-2	ILA	Nickel	21.1		NL	100	96.5	8.2
IR01MW60A	E-2	ILA	Nickel	11.1		NL	100	96.5	8.2
IR01MW64A	E-2	ILA	Nickel	15.9		NL	100	96.5	8.2
IR02MW149A	E	NBFA	Nickel	16.2	J	NL	100	96.5	8.2
IR02MWB-1	E	ORPA	Nickel	13		NL	100	96.5	8.2
IR04MW13A	E-2	ILA	Nickel	24.5		NL	100	96.5	8.2
IR07MW20A1	B	IR-07	Nickel	19.7	J	NL	100	96.5	8.2
IR07MW21A1	B	IR-07	Nickel	20.3	J	NL	100	96.5	8.2
IR07MW24A	B	IR-07	Nickel	26.4	J	NL	100	96.5	8.2
IR26MW41A	B	IR-26	Nickel	30.8	J	NL	100	96.5	8.2
IR75MW05B	NNP	ILA	Nickel	13.7		NL	100	96.5	8.2
PA50MW07A	D	IR-32	Nickel	8.9		NL	100	96.5	8.2
IR01MW38A	E-2	ILA	Selenium	20.4		50	50	14.5	71
IR01MW1-7	E-2	ILA	Selenium	20.7	J	50	50	14.5	71
IR01MW1-8	E-2	ILA	Selenium	23.5		50	50	14.5	71
IR02MW126A	E	NBFA	Selenium	17.4		50	50	14.5	71
IR02MWB-1	E	ORPA	Selenium	46.7		50	50	14.5	71
IR03MW373B	E	ORPA	Selenium	19	J	50	50	14.5	71
IR04MW13A	E-2	ILA	TCE	65		5	5	NL	200
IR06MW35A	C	RU-C5	TCE	5.3		5	5	NL	200
IR06MW59A1	C	RU-C5	TCE	140		5	5	NL	200
IR10MW13A1	B	IR-10	TCE	5.2		5	5	NL	200
IR25MW16A	C	RU-C5	TCE	120		5	5	NL	200
IR28MW136A	C	RU-C1	TCE	5.7		5	5	NL	200

Table 4-8. Exceedances of water quality criteria (October – December 2007).

Well ID	Parcel	Area of Concern	Analyte	Result (ug/L)	Validation Qualifier	Fed MCL (ug/L)	Cal MCL (ug/L)	HGAL (ug/L)	NAWQC (ug/L)
IR28MW189F	C	RU-C2	TCE	7.3		5	5	NL	200
IR28MW211F	C	RU-C4	TCE	7.7	J	5	5	NL	200
IR28MW272F	C	RU-C4	TCE	19	J	5	5	NL	200
IR28MW300F	C	RU-C2	TCE	12		5	5	NL	200
IR28MW311A	C	RU-C4	TCE	7.3		5	5	NL	200
IR28MW350F	C	RU-C4	TCE	81	J	5	5	NL	200
IR28MW355F	C	RU-C4	TCE	17	J	5	5	NL	200
IR28MW406	C	RU-C4	TCE	180		5	5	NL	200
IR71MW03A	D	IR-71	TCE	5.5		5	5	NL	200
IR04MW13A	E-2	ILA	Tetrachloroethylene (PCE)	71		5	5	NL	450
IR06MW59A1	C	RU-C5	Tetrachloroethylene (PCE)	56		5	5	NL	450
IR58MW32B	C	RU-C2	Tetrachloroethylene (PCE)	9.6		5	5	NL	450
IR71MW03A	D	IR-71	Tetrachloroethylene (PCE)	8.2		5	5	NL	450
IR01MW38A	E-2	ILA	Thallium	4.3	J	2	2	12.97	213
IR07MW26A	B	IR-07	Thallium	17.2	J	2	2	12.97	213
IR25MW16A	C	RU-C5	trans-1,2-DCE	15		100	10	NL	22,400
IR28MW151A	C	RU-C1	trans-1,2-DCE	15		100	10	NL	22,400
IR03MW218A2	E	ORPA	Vinyl chloride	0.87		2	0.5	NL	NL
IR04MW13A	E-2	ILA	Vinyl chloride	4.4		2	0.5	NL	NL
IR06MW32A	C	RU-C5	Vinyl chloride	1.6		2	0.5	NL	NL
IR06MW35A	C	RU-C5	Vinyl chloride	0.54		2	0.5	NL	NL
IR06MW40A	C	RU-C5	Vinyl chloride	110		2	0.5	NL	NL
IR06MW59A1	C	RU-C5	Vinyl chloride	19		2	0.5	NL	NL
IR10MW33A	B	IR-10	Vinyl chloride	3.4		2	0.5	NL	NL
IR10MW59A	B	IR-10	Vinyl chloride	23		2	0.5	NL	NL
IR10MW61A	B	IR-10	Vinyl chloride	22		2	0.5	NL	NL
IR25MW16A	C	RU-C5	Vinyl chloride	7.8		2	0.5	NL	NL
IR28MW136A	C	RU-C1	Vinyl chloride	180		2	0.5	NL	NL
IR28MW151A	C	RU-C1	Vinyl chloride	95		2	0.5	NL	NL

Table 4-8. Exceedances of water quality criteria (October – December 2007).

Well ID	Parcel	Area of Concern	Analyte	Result (ug/L)	Validation Qualifier	Fed MCL (ug/L)	Cal MCL (ug/L)	HGAL (ug/L)	NAWQC (ug/L)
IR28MW211F	C	RU-C4	Vinyl chloride	40		2	0.5	NL	NL
IR28MW407	C	RU-C4	Vinyl chloride	17		2	0.5	NL	NL
IR58MW31A	C	RU-C2	Vinyl chloride	18		2	0.5	NL	NL
IR58MW33B	C	RU-C2	Vinyl chloride	0.6		2	0.5	NL	NL
IR02MW126A	E	NBFA	Zinc	216		NL	NL	75.68	81

Notes: Shaded values indicate exceedance of criterion.

Parcel:

NNP: Non-Navy property, reported by SAP-assigned parcel

Validation Code (data qualifiers):

J: Detected below the practical quantitation limit but above the method detection limit; estimated value.

Acronyms/Abbreviations:

HGAL: Hunters Point Groundwater Ambient Level

ILA: Industrial Landfill Area

IR: Installation Restoration

MCL: Maximum Contaminant Level

NAWQC: National Ambient Water Quality Criteria

NBFA: Northwest Bay Fill Area

NL: Not Listed

ORPA: Oil Recovery Pond Area

RU: Remedial Unit

ug/L: Micrograms per liter

This page left blank intentionally

Table 4-9. Exceedances of water quality criteria (January – March 2008).

Well ID	Parcel	Area of Concern	Analyte	Result (ug/L)	Validation qualifier	Fed MCL (ug/L)	Cal MCL (ug/L)	HGAL (ug/L)	NAWQC (ug/L)
IR04MW13A	E-2	ILA	1,1-Dichloroethane	28		NL	5	NL	NL
IR04MW13A	E-2	ILA	1,1-Dichloroethene	21		7	6	NL	22,400
IR01MW60A	E-2	ILA	1,4-Dichlorobenzene	6.9	J	75	5	NL	129
IR01MW60A	E-2	ILA	1,4-Dichlorobenzene	12		75	5	NL	129
IR28MW407	C	RU-C4	1,4-Dichlorobenzene	22		75	5	NL	129
IR58MW31A	C	RU-C2	1,4-Dichlorobenzene	110		75	5	NL	129
PA50MW03A	C	RU-C1	1,4-Dichlorobenzene	10		75	5	NL	129
IR01MW02B	NNP	ILA	Ammonia (as N)	160	J	NL	NL	NL	35
IR01MW05A	NNP	ILA	Ammonia (as N)	4500		NL	NL	NL	35
IR01MW09B	E-2	ILA	Ammonia (as N)	2700		NL	NL	NL	35
IR01MW10A	E-2	ILA	Ammonia (as N)	480		NL	NL	NL	35
IR01MW26B	E-2	ILA	Ammonia (as N)	5400		NL	NL	NL	35
IR01MW31A	E-2	ILA	Ammonia (as N)	3300		NL	NL	NL	35
IR01MW366B	E-2	ILA	Ammonia (as N)	4500		NL	NL	NL	35
IR01MW38A	E-2	ILA	Ammonia (as N)	17700		NL	NL	NL	35
IR01MW403A	NNP	ILA	Ammonia (as N)	940		NL	NL	NL	35
IR01MW42A	E-2	ILA	Ammonia (as N)	6500		NL	NL	NL	35
IR01MW48A	E-2	ILA	Ammonia (as N)	14900		NL	NL	NL	35
IR01MW53B	E-2	ILA	Ammonia (as N)	130	J	NL	NL	NL	35
IR01MW60A	E-2	ILA	Ammonia (as N)	9300		NL	NL	NL	35
IR01MW64A	E-2	ILA	Ammonia (as N)	1200		NL	NL	NL	35
IR01MWLF1A	E-2	ILA	Ammonia (as N)	2500		NL	NL	NL	35
IR01MWLF4B	E-2	ILA	Ammonia (as N)	7000		NL	NL	NL	35
IR04MW13A	E-2	ILA	Ammonia (as N)	600		NL	NL	NL	35
IR04MW36A	E-2	ILA	Ammonia (as N)	280	J	NL	NL	NL	35
IR75MW05B	NNP	ILA	Ammonia (as N)	300	J	NL	NL	NL	35
IR01MW26B	E-2	ILA	Arsenic	14.1		10	50	27.34	36
IR01MW366B	E-2	ILA	Arsenic	14.9		10	50	27.34	36

Table 4-9. Exceedances of water quality criteria (January – March 2008).

Well ID	Parcel	Area of Concern	Analyte	Result (ug/L)	Validation qualifier	Fed MCL (ug/L)	Cal MCL (ug/L)	HGAL (ug/L)	NAWQC (ug/L)
IR02MW179A	E	IR-02	Arsenic	13.5		10	50	27.34	36
IR04MW36A	E-2	ILA	Arsenic	88.8		10	50	27.34	36
IR07MW27A	B	IR-07	Arsenic	19.9		10	50	27.34	36
PA50MW07A	D	IR-32	Arsenic	19.3		10	50	27.34	36
IR01MW38A	E-2	ILA	Barium	1120	J	2,000	1,000	504	NL
IR01MW42A	E-2	ILA	Barium	782	J	2,000	1,000	504	NL
IR01MW48A	E-2	ILA	Barium	866		2,000	1,000	504	NL
IR01MW62A	E-2	ILA	Barium	1100	J	2,000	1,000	504	NL
IR03MW218A2	E	ORPA	Barium	3970		2,000	1,000	504	NL
IR39MW33A	E	IR-39	Barium	1970		2000	1,000	504	NL
IR01MW05A	NNP	ILA	Benzene	1.9		5	1	NL	510
IR01MW48A	E-2	ILA	Benzene	3.2		5	1	NL	510
IR01MW60A	E-2	ILA	Benzene	2.7		5	1	NL	510
IR03MW218A2	E	ORPA	Benzene	6.6	J	5	1	NL	510
IR28MW136A	C	RU-C1	Benzene	1.1		5	1	NL	510
IR58MW31A	C	RU-C2	Benzene	10	J	5	1	NL	510
IR06MW54F	C	RU-C5	Carbon Tetrachloride	4.9		5	0.5	NL	6,400
IR28MW188F	C	IR-28	Carbon Tetrachloride	42		5	0.5	NL	6,400
IR28MW190F	C	RU-C2	Carbon Tetrachloride	27		5	0.5	NL	6,400
IR28MW272F	C	RU-C4	Carbon Tetrachloride	1.4		5	0.5	NL	6,400
IR28MW300F	C	RU-C2	Carbon Tetrachloride	6.3		5	0.5	NL	6,400
IR28MW315F	C	RU-C4	Carbon Tetrachloride	1.1		5	0.5	NL	6,400
IR28MW397B	C	RU-C2	Carbon Tetrachloride	8.3		5	0.5	NL	6,400
IR28MW406	C	RU-C4	Carbon Tetrachloride	0.56		5	0.5	NL	6,400
IR58MW31F	C	RU-C2	Carbon Tetrachloride	0.87		5	0.5	NL	6,400
IR58MW31A	C	RU-C2	Chlorobenzene (MCB)	990		100	70	NL	129
IR06MW54F	C	RU-C5	Chromium	78.6		100	50	15.66	1,030
IR06MW60A	C	IR-06	Chromium	22.6		100	50	15.66	1,030

Table 4-9. Exceedances of water quality criteria (January – March 2008).

Well ID	Parcel	Area of Concern	Analyte	Result (ug/L)	Validation qualifier	Fed MCL (ug/L)	Cal MCL (ug/L)	HGAL (ug/L)	NAWQC (ug/L)
IR09MW62A	D	IR-09	Chromium	27.6		100	50	15.66	1,030
IR10MW81A	B	IR-10	Chromium	16.1		100	50	15.66	1,030
IR28MW125A	C	RU-C1	Chromium	164		100	50	15.66	1,030
IR58MW25F	C	RU-C2	Chromium	68.2		100	50	15.66	1,030
IR04MW13A	E-2	ILA	cis-1,2-DCE	32		70	6	NL	22,400
IR10MW61A	B	IR-10	cis-1,2-DCE	39		70	6	NL	22,400
IR10MW71A	B	IR-10	cis-1,2-DCE	11		70	6	NL	22,400
IR25MW16A	C	RU-C5	cis-1,2-DCE	16	J	70	6	NL	22,400
IR28MW136A	C	RU-C1	cis-1,2-DCE	120		70	6	NL	22,400
IR28MW151A	C	RU-C1	cis-1,2-DCE	110		70	6	NL	22,400
IR28MW211F	C	RU-C4	cis-1,2-DCE	54		70	6	NL	22,400
IR28MW216F	C	RU-C2	cis-1,2-DCE	7.5		70	6	NL	22,400
IR28MW272F	C	RU-C4	cis-1,2-DCE	6.4		70	6	NL	22,400
IR28MW406	C	RU-C4	cis-1,2-DCE	19		70	6	NL	22,400
IR28MW407	C	RU-C4	cis-1,2-DCE	96		70	6	NL	22,400
PA50MW03A	C	RU-C1	cis-1,2-DCE	6.1		70	6	NL	22,400
IR01MW53B	E-2	ILA	Copper	9.2		1,300	1,300	28	3.1
IR01MWLF2A	E-2	ILA	Copper	11		1,300	1,300	28	3.1
IR02MW126A	E	NBFA	Copper	24.4		1,300	1,300	28	3.1
IR01MW38A	E-2	ILA	Cyanide	8.7	J	200	150	NL	1
IR01MW62A	E-2	ILA	Cyanide	5.6	J	200	150	NL	1
IR01MW63A	E-2	ILA	Cyanide	16	J	200	150	NL	1
IR01MW64A	E-2	ILA	Cyanide	169		200	150	NL	1
IR01MWLF1A	E-2	ILA	Cyanide	20.6	J	200	150	NL	1
IR01MW05A	NNP	ILA	Dieldrin	0.033	J	NL	NL	NL	0.0019
IR25MW17A	C+	RU-C5	Freon 150	0.6		5	0.5	NL	11,300
IR28MW211F	C	RU-C4	Freon 150	18		5	0.5	NL	11,300
IR28MW407	C	RU-C4	Freon 150	1.1		5	0.5	NL	11,300

Table 4-9. Exceedances of water quality criteria (January – March 2008).

Well ID	Parcel	Area of Concern	Analyte	Result (ug/L)	Validation qualifier	Fed MCL (ug/L)	Cal MCL (ug/L)	HGAL (ug/L)	NAWQC (ug/L)
IR06MW54F	C	RU-C5	Hexavalent chromium	67.1		NL	NL	NL	50
IR28MW125A	C	RU-C1	Hexavalent chromium	161		NL	NL	NL	50
IR58MW25F	C	RU-C2	Hexavalent chromium	64.2		NL	NL	NL	50
IR05MW85A	E	IR-05	Mercury	2.3		2	2	0.6	0.94
IR26MW47A	B	EE-05	Mercury	2.4		2	2	0.6	0.94
IR26MW49A	B	EE-05	Mercury	1.5		2	2	0.6	0.94
IR01MW05A	NNP	ILA	Nickel	36.6		NL	100	96.5	8.2
IR01MW10A	E-2	ILA	Nickel	24.4		NL	100	96.5	8.2
IR01MW42A	E-2	ILA	Nickel	19.8	J	NL	100	96.5	8.2
IR01MW60A	E-2	ILA	Nickel	11.1		NL	100	96.5	8.2
IR01MW64A	E-2	ILA	Nickel	11.9		NL	100	96.5	8.2
IR01MWI-8	E-2	ILA	Nickel	10.3		NL	100	96.5	8.2
IR01MWLF2A	E-2	ILA	Nickel	58.7		NL	100	96.5	8.2
IR02MW149A	E	NBFA	Nickel	11.4		NL	100	96.5	8.2
IR02MWB-1	E	ORPA	Nickel	16.9		NL	100	96.5	8.2
IR04MW13A	E-2	ILA	Nickel	25.4		NL	100	96.5	8.2
IR07MW20A1	B	IR-07	Nickel	11.6	J	NL	100	96.5	8.2
IR07MW21A1	B	IR-07	Nickel	21.4	J	NL	100	96.5	8.2
IR07MW23A	B	IR-07	Nickel	29.9	J	NL	100	96.5	8.2
IR07MW25A	B	IR-07	Nickel	20.1	J	NL	100	96.5	8.2
IR61MW05A	B	IR-61	Nickel	8.4	J	NL	100	96.5	8.2
IR75MW05B	NNP	ILA	Nickel	11		NL	100	96.5	8.2
IR01MW05A	NNP	ILA	P,P'-DDT	0.029	J	NL	NL	NL	0.001
IR01MW05A	NNP	ILA	PCB-1260	0.44	J	0.5	0.5	NL	0.03
IR28MW171A	C	RU-C1	PCB-1260	0.46	J	0.5	0.5	NL	0.03
IR07MW27A	B	IR-07	PCP	9.4	J	1	1	NL	7.9
IR01MW403A	NNP	ILA	Selenium	17.1		50	50	14.5	71
IR01MW26B	E-2	ILA	Silver	1.3		100	100	7.43	0.19

Table 4-9. Exceedances of water quality criteria (January – March 2008).

Well ID	Parcel	Area of Concern	Analyte	Result (ug/L)	Validation qualifier	Fed MCL (ug/L)	Cal MCL (ug/L)	HGAL (ug/L)	NAWQC (ug/L)
IR01MW38A	E-2	ILA	Silver	1		100	100	7.43	0.19
IR01MW42A	E-2	ILA	Silver	0.82	J	100	100	7.43	0.19
IR01MWLF2A	E-2	ILA	Silver	0.99	J	100	100	7.43	0.19
IR02MW149A	E	NBFA	Silver	0.78	J	100	100	7.43	0.19
IR02MW179A	E	IR-02	Silver	1.3		100	100	7.43	0.19
IR03MW224A	E	ORPA	Silver	0.74	J	100	100	7.43	0.19
IR04MW13A	E-2	ILA	Silver	0.83	J	100	100	7.43	0.19
IR07MW20A1	B	IR-07	Silver	0.94	J	100	100	7.43	0.19
IR07MW26A	B	IR-07	Silver	1.3	J	100	100	7.43	0.19
IR07MWS-2	B	IR-07	Silver	0.77	J	100	100	7.43	0.19
IR07MWS-4	B	IR-07	Silver	0.82	J	100	100	7.43	0.19
IR04MW13A	E-2	ILA	TCE	44		5	5	NL	200
IR04MW37A	E	IR-04	TCE	8.5		5	5	NL	200
IR06MW32A	C	RU-C5	TCE	5.2		5	5	NL	200
IR10MW71A	B	IR-10	TCE	21		5	5	NL	200
IR28MW136A	C	RU-C1	TCE	8.1		5	5	NL	200
IR28MW151A	C	RU-C1	TCE	18		5	5	NL	200
IR28MW211F	C	RU-C4	TCE	5.9		5	5	NL	200
IR28MW272F	C	RU-C4	TCE	23		5	5	NL	200
IR28MW298A	C	RU-C4	TCE	7.8		5	5	NL	200
IR28MW300F	C	RU-C2	TCE	10		5	5	NL	200
IR28MW311A	C	RU-C4	TCE	12		5	5	NL	200
IR28MW312F	C	RU-C4	TCE	7.3		5	5	NL	200
IR28MW350F	C	RU-C4	TCE	64		5	5	NL	200
IR28MW355F	C	RU-C4	TCE	13		5	5	NL	200
IR28MW406	C	RU-C4	TCE	95		5	5	NL	200
PA50MW03A	C	RU-C1	TCE	5.4		5	5	NL	200
IR04MW13A	E-2	ILA	Tetrachloroethylene (PCE)	28		5	5	NL	450

Table 4-9. Exceedances of water quality criteria (January – March 2008).

Well ID	Parcel	Area of Concern	Analyte	Result (ug/L)	Validation qualifier	Fed MCL (ug/L)	Cal MCL (ug/L)	HGAL (ug/L)	NAWQC (ug/L)
IR28MW136A	C	RU-C1	Tetrachloroethylene (PCE)	14		5	5	NL	450
IR71MW03A	D	IR-71	Tetrachloroethylene (PCE)	5.7		5	5	NL	450
PA50MW03A	C	RU-C1	Tetrachloroethylene (PCE)	12		5	5	NL	450
IR01MW64A	E-2	ILA	Thallium	2.1	J	2	2	12.97	213
IR01MWLF2A	E-2	ILA	Thallium	2.4	J	2	2	12.97	213
IR02MW126A	E	NBFA	Thallium	7.2	J	2	2	12.97	213
IR07MW20A1	B	IR-07	Thallium	2.1	J	2	2	12.97	213
IR28MW151A	C	RU-C1	trans-1,2-DCE	23		100	10	NL	22,400
IR28MW407	C	RU-C4	trans-1,2-DCE	16		100	10	NL	22,400
IR04MW13A	E-2	ILA	Vinyl chloride	2.7		2	0.5	NL	NL
IR06MW32A	C	RU-C5	Vinyl chloride	4.2		2	0.5	NL	NL
IR06MW40A	C	RU-C5	Vinyl chloride	120		2	0.5	NL	NL
IR10MW59A	B	IR-10	Vinyl chloride	61		2	0.5	NL	NL
IR10MW61A	B	IR-10	Vinyl chloride	25		2	0.5	NL	NL
IR10MW71A	B	IR-10	Vinyl chloride	2.3		2	0.5	NL	NL
IR25MW16A	C	RU-C5	Vinyl chloride	1	J	2	0.5	NL	NL
IR28MW136A	C	RU-C1	Vinyl chloride	300		2	0.5	NL	NL
IR28MW151A	C	RU-C1	Vinyl chloride	180		2	0.5	NL	NL
IR28MW211F	C	RU-C4	Vinyl chloride	50		2	0.5	NL	NL
IR28MW407	C	RU-C4	Vinyl chloride	130		2	0.5	NL	NL
IR58MW31A	C	RU-C2	Vinyl chloride	69		2	0.5	NL	NL
IR02MW126A	E	NBFA	Zinc	195		NL	NL	75.68	181

Notes: Shaded values indicate exceedances of criterion.

Parcel:

NNP: Non-Navy property, reported by SAP-assigned parcel

Validation Code (data qualifiers):

J: Detected below the practical quantitation limit but above the method detection limit; estimated value.

Acronyms/Abbreviations:

HGAL: Hunters Point Groundwater Ambient Level
ILA: Industrial Landfill Area
IR: Installation Restoration
MCL: Maximum Contaminant Level
NAWQC: National Ambient Water Quality Criteria
NBFA: Northwest Bay Fill Area
NL: Not Listed
ORPA: Oil Recovery Pond Area
RU: Remedial Unit
ug/L: Micrograms per liter

This page left blank intentionally

Table 4-10. SAP deviations for 4Q2007.

Well ID	Parcel	SAP Deviations and Justifications		
		Justification for Water Level Not Measured	Justification for Well Not Sampled	Field Procedure Deviation
IR01MW17B	E-2	no deviation	obstructed – casing kinked	no deviation
IR01MW366A	E-2	no deviation	insufficient water	no deviation
IR01MW367A	E-2	casing obstructed - gravel		N/A
IR01MW58A	E-2	casing damaged		N/A
IR01MWI-6	E-2	N/A	damaged	no deviation
IR01MWLF4A	E-2	inaccessible – plastic sheeting		N/A
IR02MW114A2	E	casing damaged	N/A	N/A
IR02MW146A	E	NAPL	N/A	N/A
IR02MW173A	E	NAPL	N/A	N/A
IR02MW183A	E	damaged	N/A	N/A
IR02MW206A2	E	damaged		N/A
IR02MWB-2	E	no deviation	obstructed – bent casing	no deviation
IR02MWB-5	E	no deviation	obstructed – bent casing	no deviation
IR02MWC5-W	E	inaccessible – buried under haul road		N/A
IR03MW218A1	E	NAPL	N/A	N/A
IR03MW225A	E	NAPL	N/A	N/A
IR03MW226A	E	NAPL	N/A	N/A
IR03MW369A	E	NAPL		N/A
IR03MW370A	E	NAPL		N/A
IR03MW371A	E	NAPL		N/A
IR03MWO-1	E	NAPL	N/A	N/A
IR03MWO-2	E	NAPL	N/A	N/A
IR03MWO-3	E	NAPL	N/A	N/A
IR04MW31A	E-2	inaccessible – standing water at well	N/A	N/A
IR06MW22A	C	measured outside time window	N/A	N/A
IR06MW49F	C	measured outside time window	N/A	N/A
IR06MW59A1	C	inaccessible – standing water at well	no deviation	no deviation
IR06MW60A	B	N/A	inaccessible – covered by debris	N/A
IR07MW19A	B	inaccessible – trench		N/A
IR07MW93A	B	inaccessible – covered by soil in laydown area	N/A	N/A
IR07MW94A	B	inaccessible – covered by soil in laydown area	N/A	N/A

Table 4-10. SAP deviations for 4Q2007.

Well ID	Parcel	SAP Deviations and Justifications		
		Justification for Water Level Not Measured	Justification for Well Not Sampled	Field Procedure Deviation
IR09MW37A	D	inaccessible – excavation in progress	no deviation	no deviation
IR09MW51F	D	inaccessible – excavation in progress		N/A
IR09MW52A	D	inaccessible – excavation in progress	no deviation	no deviation
IR09MW63A	D	no deviation	no deviation	Readings were not obtained at the required 1 liter frequency; however, 8 liters were purged before sampling
IR09PPY1	D	N/A	inaccessible – excavation in progress	no deviation
IR10MW14A	B	inaccessible – under debris pile		N/A
IR10MW28A	B	no deviation	insufficient water	no deviation
IR10MW29A1	B	inaccessible – standing water at well	N/A	N/A
IR10MW79A	B	inaccessible – standing water at well	no deviation	Readings were not obtained at the required 1 liter frequency; however, 8 liters were purged before sampling
IR10MW80A	B	inaccessible – standing water at well	no deviation	no deviation
IR11MW25A	E	damaged		N/A
IR11MW27A	E	no deviation	insufficient water	no deviation
IR12MW11A	E-2	inaccessible – well under plastic sheeting	N/A	N/A
IR12MW17A	E	inaccessible – well under plastic sheeting		N/A
IR12MW21A	E	NAPL	NAPL	N/A
IR18MW100B	B	inaccessible – covered by soil in laydown area	N/A	N/A
IR18MW101B	B	inaccessible – covered by soil in laydown area	N/A	N/A
IR20MW17A	B	damaged	N/A	N/A
IR24MW06A	B	inaccessible – buried under concrete rubble	N/A	N/A
IR25MW11A	C	NAPL	N/A	N/A
IR25MW37A	C	inaccessible – standing water at well	no deviation	no deviation
IR25MW37B	C	inaccessible – standing water at well	N/A	N/A
IR25MW60A1	C	no deviation	casing obstructed – gravel inside well	no deviation
IR25MW61A1	C	inaccessible – standing water at well	no deviation	no deviation
IR25MW61A2	C	inaccessible – standing water at well	no deviation	no deviation

Table 4-10. SAP deviations for 4Q2007.

Well ID	Parcel	SAP Deviations and Justifications		
		Justification for Water Level Not Measured	Justification for Well Not Sampled	Field Procedure Deviation
IR28MW169A	C	no deviation	inaccessible – covered by metal debris	no deviation
IR28MW188F	C	no deviation	no deviation	Specific conductance did not stabilize; purging stopped at 9 liters
IR28MW311A	C	decommissioned – not removed from compliance program prior to event		N/A
IR28MW396A	C	no deviation	no deviation	Readings were not obtained at the required 1 liter frequency; however, 8 liters were purged before sampling
IR28MW933F	C	obstructed – dedicated equipment in well	N/A	N/A
IR28MW934F	C	obstructed – dedicated equipment in well	N/A	N/A
IR33MW65A	D	inaccessible – standing water at well	N/A	N/A
IR36MW125A	E	no deviation	insufficient water	no deviation
IR39MW21A	E	no deviation	NAPL	no deviation
IR46MW37A	B	no deviation	inaccessible – buried under soil pile	no deviation
IR46MW39A	B	inaccessible – radiological restricted area; well possibly removed	N/A	N/A
IR55MW04A	D	inaccessible – covered by soil in laydown area	N/A	N/A
IR70MW11A	D	inaccessible – safety issue; active heavy equipment	N/A	N/A
PA36MW08A	E	no deviation	NAPL	no deviation
PA50MW11A	D	decommissioned – not removed from compliance program prior to event		N/A
PA50MW12A	D	decommissioned – not removed from compliance program prior to event	no deviation	Specific conductance did not stabilize; purging stopped at 9 liters
UT03MW11A	B	inaccessible – buried under mud	no deviation	no deviation

Notes

N/A: Not applicable; sampling or water level measurement not required, or the SAP deviation precluded conducting sampling or water level measurement.

NAPL: Non-aqueous phase liquid present or historically present.

SAP: Sampling and Analysis Plan (TtEMI 2004); includes SAP addendum no. 1 dated April 2007.

This page left blank intentionally

Table 4-11. SAP deviations for 1Q2008.

Well ID	Parcel	SAP Deviations and Justifications		
		Justification for Water Level Not Measured	Justification for Well Not Sampled	Field Procedure Deviation
IR01MW400A	E-2	inaccessible – locked gate on non-Navy property	N/A	N/A
IR01MW402A	E-2	inaccessible – locked gate on non-Navy property	N/A	N/A
IR01MW403A	E-2	inaccessible – locked gate on non-Navy property	no deviation	no deviation
IR01MW403B	E-2	no deviation	inaccessible – standing water at well	no deviation
IR02MW146A	E	NAPL	N/A	N/A
IR02MW173A	E	NAPL	N/A	N/A
IR03MW218A1	E	NAPL	N/A	N/A
IR03MW225A	E	NAPL	N/A	N/A
IR03MW226A	E	NAPL	N/A	N/A
IR03MW369A	E	NAPL		N/A
IR03MW370A	E	NAPL		N/A
IR03MW371A	E	NAPL		N/A
IR03MWO-1	E	NAPL	N/A	N/A
IR03MWO-2	E	NAPL	N/A	N/A
IR03MWO-3	E	NAPL	N/A	N/A
IR04MW31A	E-2	inaccessible – standing water at well	N/A	N/A
IR04MW38A	E-2	inaccessible – jammed slip cap	N/A	N/A
IR06MW44A	B	inaccessible – possibly removed by trenching	N/A	N/A
IR06MW59A1	C	inaccessible – standing water at well		no deviation
IR06MW59A2	C	N/A	inaccessible – standing water at well	N/A
IR07MW19A	B	inaccessible – trench	inaccessible – standing water at well	N/A
IR07MW93A	B	inaccessible – covered by soil in laydown area	N/A	N/A
IR07MW94A	B	inaccessible – covered by soil in laydown area	N/A	N/A
IR09MW35A	D	no deviation	inaccessible – trench	no deviation
IR09MW37A	D	no deviation	inaccessible – trench	no deviation
IR09MW38A	D	inaccessible – trench		N/A
IR09MW39A	D	inaccessible – trench		N/A
IR09MW44A	D	inaccessible – trench		N/A
IR09MW51F	D	inaccessible – trench		N/A

Table 4-11. SAP deviations for 1Q2008.

Well ID	Parcel	SAP Deviations and Justifications		
		Justification for Water Level Not Measured	Justification for Well Not Sampled	Field Procedure Deviation
IR09MW52A	D	no deviation	inaccessible – RAD building, no entry	no deviation
IR09MW63A	D	inaccessible – trench		N/A
IR09PPY1	D	N/A	inaccessible – trench	N/A
IR10MW14A	B	no deviation	inaccessible – standing water at well	no deviation
IR10MW29A1	B	inaccessible – flooded	N/A	N/A
IR10MW31A1	B	no deviation	inaccessible – trench	no deviation
IR10MW33A	B	no deviation	no deviation	Specific conductance did not stabilize; purging stopped at 12L
IR10MW62A	B	N/A	inaccessible – standing water at well	N/A
IR10MW79A	B	no deviation	inaccessible – safety issue; in active single lane roadway	no deviation
IR12MW21A	E	NAPL		N/A
IR18MW21A	B	no deviation	evidence of soil intrusion into well	no deviation
IR18MW100B	B	inaccessible – covered by soil in laydown area	N/A	N/A
IR18MW101B	B	inaccessible – covered by soil in laydown area	N/A	N/A
IR20MW17A	B	inaccessible – covered by debris	N/A	N/A
IR24MW06A	B	inaccessible – possibly removed by trench	N/A	N/A
IR25MW11A	C	NAPL	N/A	N/A
IR26MW41A	B	no deviation	inaccessible – safety issue; too close to trench	no deviation
IR26MW44A	C	inaccessible – radiological restricted area	N/A	N/A
IR28MW311A	C	decommissioned – not removed from compliance program prior to event		N/A
IR33MW63A	D	inaccessible – trench	N/A	N/A
IR33MW65A	D	inaccessible – mud	N/A	N/A
IR34MW02A	D	inaccessible – standing water at well	N/A	N/A
IR39MW21A	E	no deviation	NAPL	no deviation
IR46MW39A	B	inaccessible – radiological restricted area; well possibly removed	N/A	N/A
IR46MW41A	B	inaccessible – possibly removed by trench	N/A	N/A

Table 4-11. SAP deviations for 1Q2008.

Well ID	Parcel	SAP Deviations and Justifications		
		Justification for Water Level Not Measured	Justification for Well Not Sampled	Field Procedure Deviation
IR46MW48A	B	inaccessible – covered by soil pile	N/A	N/A
IR70MW07A	D	N/A	inaccessible – covered by soil pile	N/A
IR71MW03A	D	inaccessible – covered by soil pile	no deviation	no deviation
IR71MW12B		inaccessible – covered by soil pile	no deviation	no deviation
PA36MW08A	E	NAPL		N/A
UT03MW11A	B	inaccessible – covered by soil pile		N/A

Notes

N/A: Not applicable; sampling or water level measurement not required, or the SAP deviation precluded conducting sampling or water level measurement.

NAPL: Non-aqueous phase liquid present or historically present.

SAP: Sampling and Analysis Plan (TtEMI 2004); includes SAP addenda no. 1 (dated April 2007) and no. 2 (dated December 2007).

This page left blank intentionally

Table 4-12. SAP deviation tracking for wells not sampled and not measured.

Well ID	Parcel	SAP Requirement Affected	2Q2007 Reason for Deviation	3Q2007 Reason for Deviation	4Q2007 Reason for Deviation	1Q2008 Reason for Deviation	Corrective Action
IR07MW19A	B	DTW and sampling	inaccessible	inaccessible	inaccessible	inaccessible	Proceed when accessible
IR07MW93A	B	DTW	inaccessible	inaccessible	inaccessible	inaccessible	Proceed when accessible
IR07MW94A	B	DTW	inaccessible	inaccessible	inaccessible	inaccessible	Proceed when accessible
IR09MW37A	D	sampling	no deviation	no deviation	inaccessible	inaccessible	Proceed when accessible
IR09MW51F	D	DTW and sampling	no deviation	no deviation	inaccessible	inaccessible	Proceed when accessible
IR09MW52A	D	sampling	no deviation	no deviation	inaccessible	inaccessible	Proceed when accessible
IR09PPY1	D	sampling	no deviation	no deviation	inaccessible	inaccessible	Proceed when accessible
IR18MW100B	B	DTW	inaccessible	inaccessible	inaccessible	inaccessible	Proceed when accessible
IR18MW101B	B	DTW	inaccessible	inaccessible	inaccessible	inaccessible	Proceed when accessible
IR20MW17A	B	DTW	no deviation	no deviation	damaged	inaccessible	Evaluate well condition when accessible
IR24MW06A	B	DTW	no deviation	no deviation	inaccessible	inaccessible – possibly removed by trenching	Evaluate well condition when accessible
IR46MW39A	B	DTW	inaccessible	inaccessible	inaccessible	inaccessible – possibly removed	Evaluate well condition when accessible
UT03MW11A	B	DTW and sampling	no deviation	no deviation	inaccessible	inaccessible (DTW only)	Proceed when accessible

Notes:

Temporary deviations such as standing water, vehicles covering wells, and safety hazards are not tracked in this table.

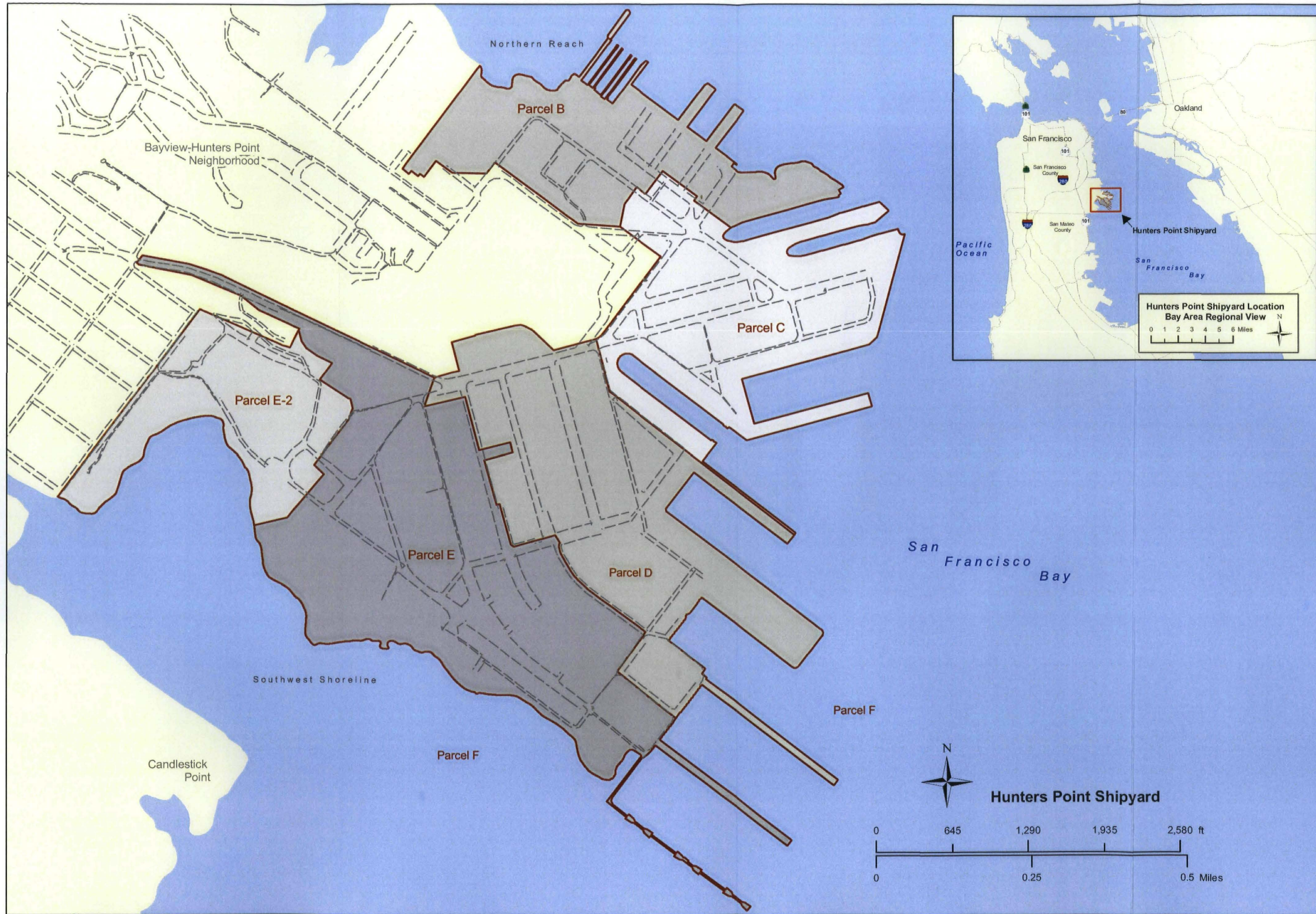
NAPL wells are not tracked in this table.

DTW = Depth to Water

This page left blank intentionally

Figures

This page left blank intentionally



FIGURE

1

Geographic Setting

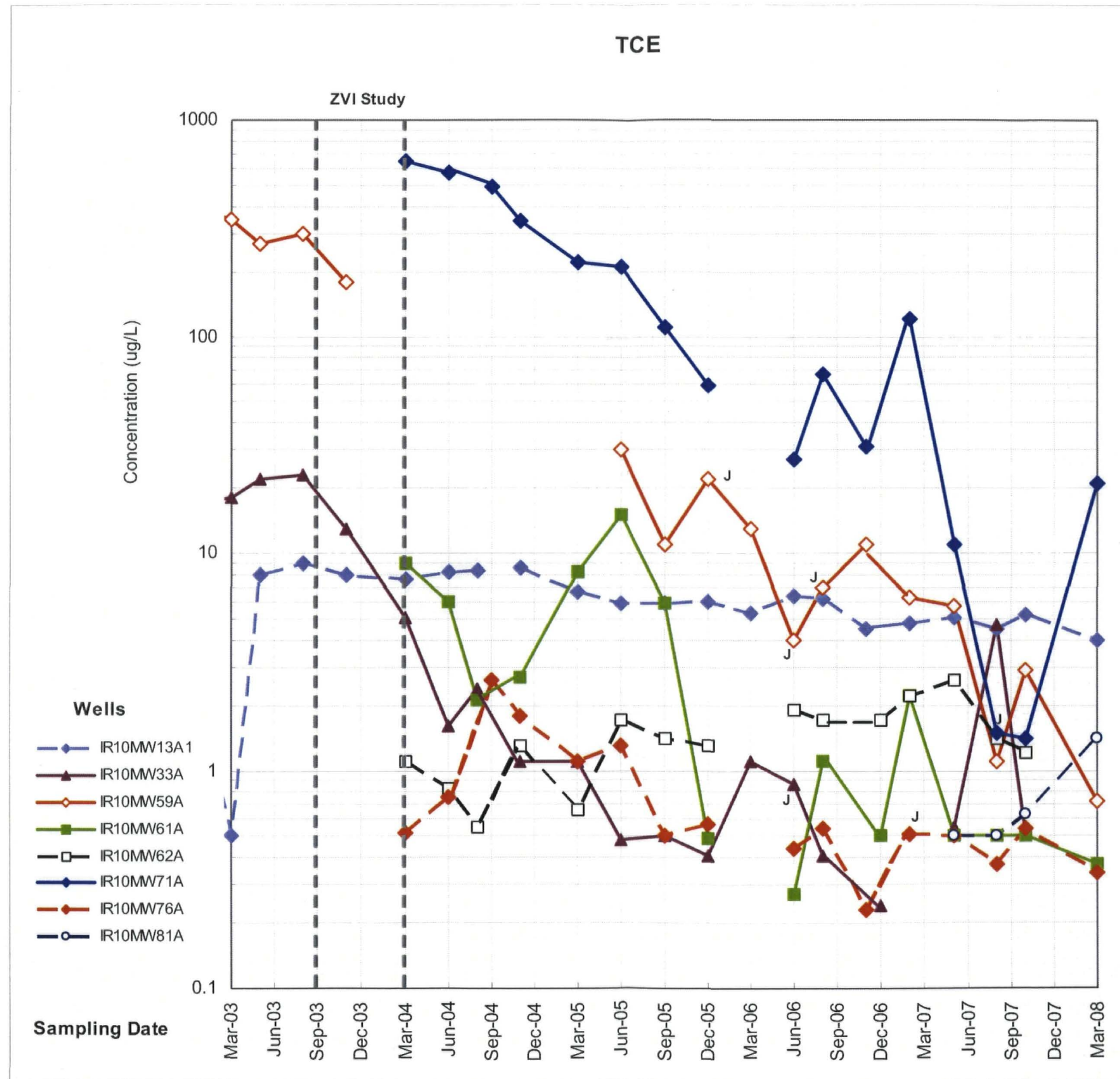
Semi-Annual Groundwater Monitoring Report
(October 2007 - March 2008)
July 2008 CEKA-3001-0000-0008

CE² KLEINFELDER
7901 Stoneridge Drive, Suite 505, Pleasanton, CA 94588-3677
PH. (925)463-7301 FAX. (925)463-7351

NAVIFAC
Naval Facilities Engineering Command
Hunters Point Shipyard, San Francisco, California
U.S. Navy, Southwest Division, NAVIFAC, San Diego, California

S:\unclassified_CE2_Corporation_P\ref: 030108

Note:
 Practical quantitation limit 0.5 ug/L.
 Estimated values greater than 0.5 ug/L shown with "J" qualifier.
 IR10MW33A not sampled in 1Q07.
 IR10MW59A not sampled in 1Q04, 2Q04, 3Q04, 4Q04, 1Q05
 IR10MW61A, IR10MW62A, IR10MW71A, IR10MW76A not sampled 1Q06
 IR10MW81A installed 2Q07.



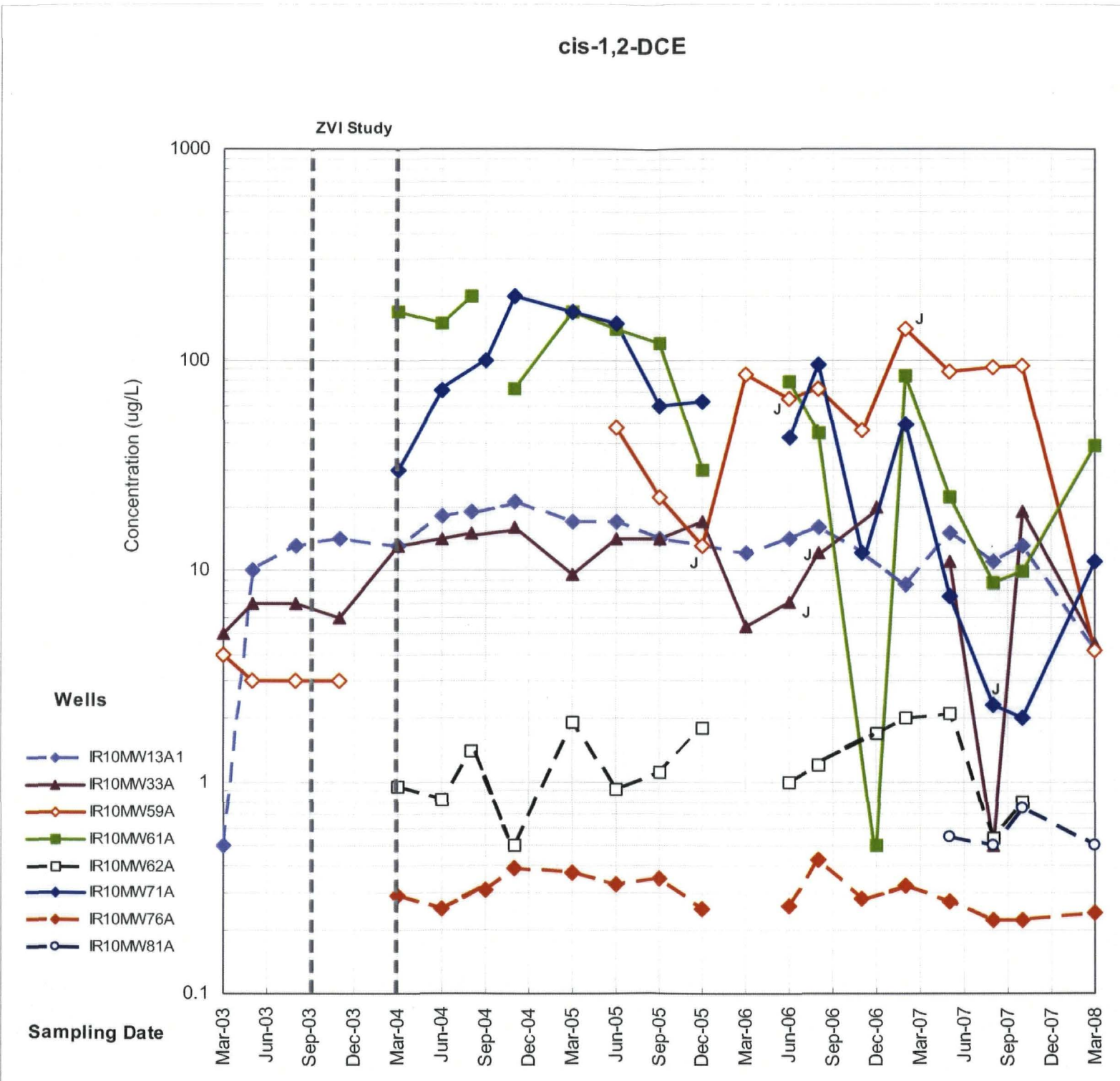
CE² KLEINFELDER
 7901 Stoneridge Drive, Suite 505, Pleasanton, CA 94588-3677
 PH (925) 463-7301 FAX (925) 463-7351

NAVFAC
 Hunters Point Shipyard, San Francisco, California
 U.S. Navy, Southwest Division, NAVFAC, San Diego, California
 Drawn by: N. Cook 6/9/2008 Project: C5006

**Time-series plot of TCE concentrations
 in groundwater at selected IR-10 wells**

Semi-Annual Groundwater Monitoring Report
 (October 2007 - March 2008)

July 2008 CEKA-3001-00000-0008



Note:
Practical quantitation limit 0.5 ug/L.
Estimated values greater than 0.5 ug/L shown with "J" qualifier.
IR10MW33A not sampled 1Q07.
IR10MW59A not sampled 1Q04, 2Q04, 3Q04, 4Q04, 1Q05
IR10MW61A, IR10MW62A, IR10MW71A, IR10MW76A not sampled 1Q06
IR10MW81A installed 2Q07.

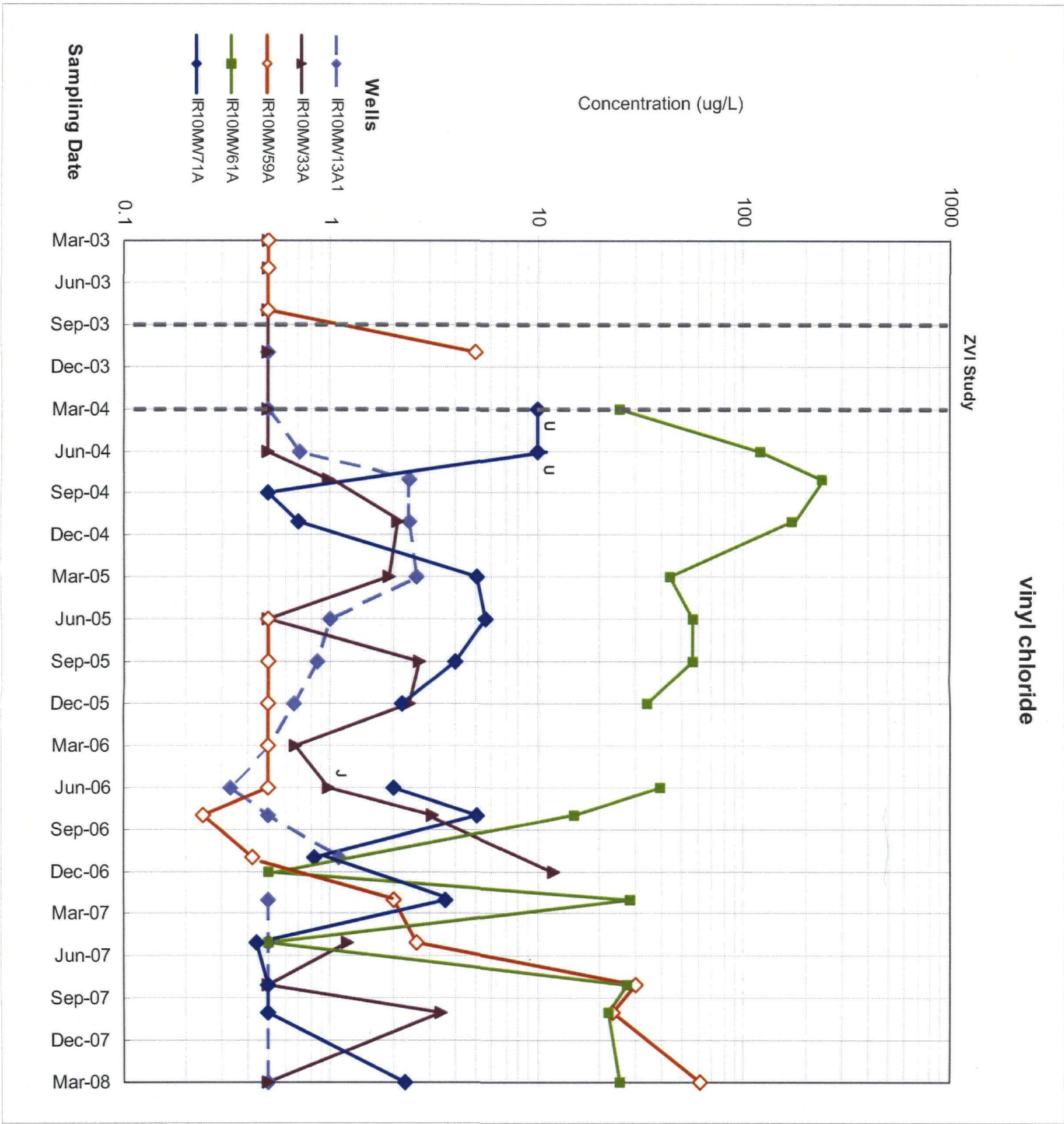
**Time-series plot of cis-1,2-dichloroethene concentrations
in groundwater at selected IR-10 wells**

Semi-Annual Groundwater Monitoring Report
(October 2007 - March 2008)
July 2008 CEKA-3001-0000-0008

CE²KLEINFELDER
7901 Stoneridge Drive, Suite 505, Pleasanton, CA 94588-3677
PH (925) 463-7301 FAX (925) 463-7351

NAVFAC
Naval Facilities Engineering Command
Hunters Point Shipyard, San Francisco, California
U.S. Navy, Southwest Division, NAVFAC, San Diego, California
Drawn by: N. Cook 6/9/2008 Project: C5006

Note:
Practical quantitation limit 0.5 ug/L.
Non-detects greater than 0.5 ug/L shown with "U" qualifier.
Estimated values greater than 0.5 ug/L shown with "J" qualifier.
IR10MW33A not sampled 1Q07.
IR10MW59A not sampled 1Q04, 2Q04, 3Q04, 4Q04, 1Q05
IR10MW61A, IR10MW71A not sampled 1Q06



7901 Stoneridge Drive, Suite 505, Pleasanton, CA 94588-3677
PH (925) 463-7301 FAX (925) 463-7351



Hunters Point Shipyard, San Francisco, California
U.S. Navy, Southwest Division, NAVFAC, San Diego, California

Time-series plot of vinyl chloride concentrations
in groundwater at selected IR-10 wells

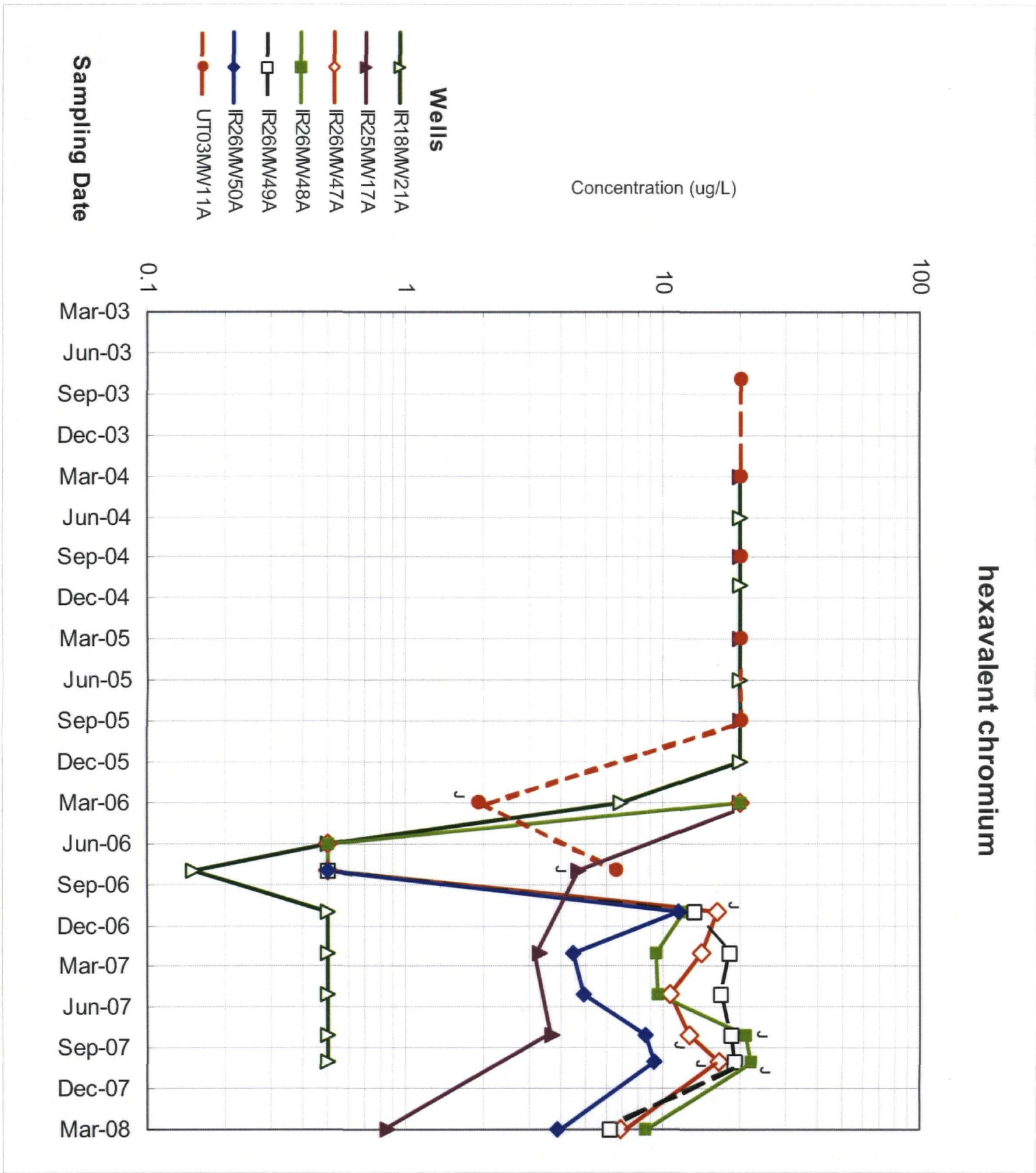
Semi-Annual Groundwater Monitoring Report
(October 2007 - March 2008)

July 2008 CEKA-3001-0000-0008

FIGURE

4-3

Note:
Practical quantitation limit for method 7196A is 20 ug/L (2001-6/2006);
for method 7199 is 0.5 ug/L (6/2006 forward)
Estimated values greater than 0.5 ug/L shown with "J" qualifier.
IR18MW21A not sampled 1Q08.
UT03MW11A not sampled 3Q07, 1Q08.



7901 Stoneridge Drive, Suite 505, Pleasanton, CA 94588-3677
PH (925) 463-7301 FAX (925) 463-7351



Hunters Point Shipyard, San Francisco, California
U.S. Navy, Southwest Division, NAVFAC, San Diego, California

Drawn by: N. Cook 6/9/2008 Project: C5006

**Time-series plot of hexavalent chromium concentrations
in groundwater at selected Parcel B wells**

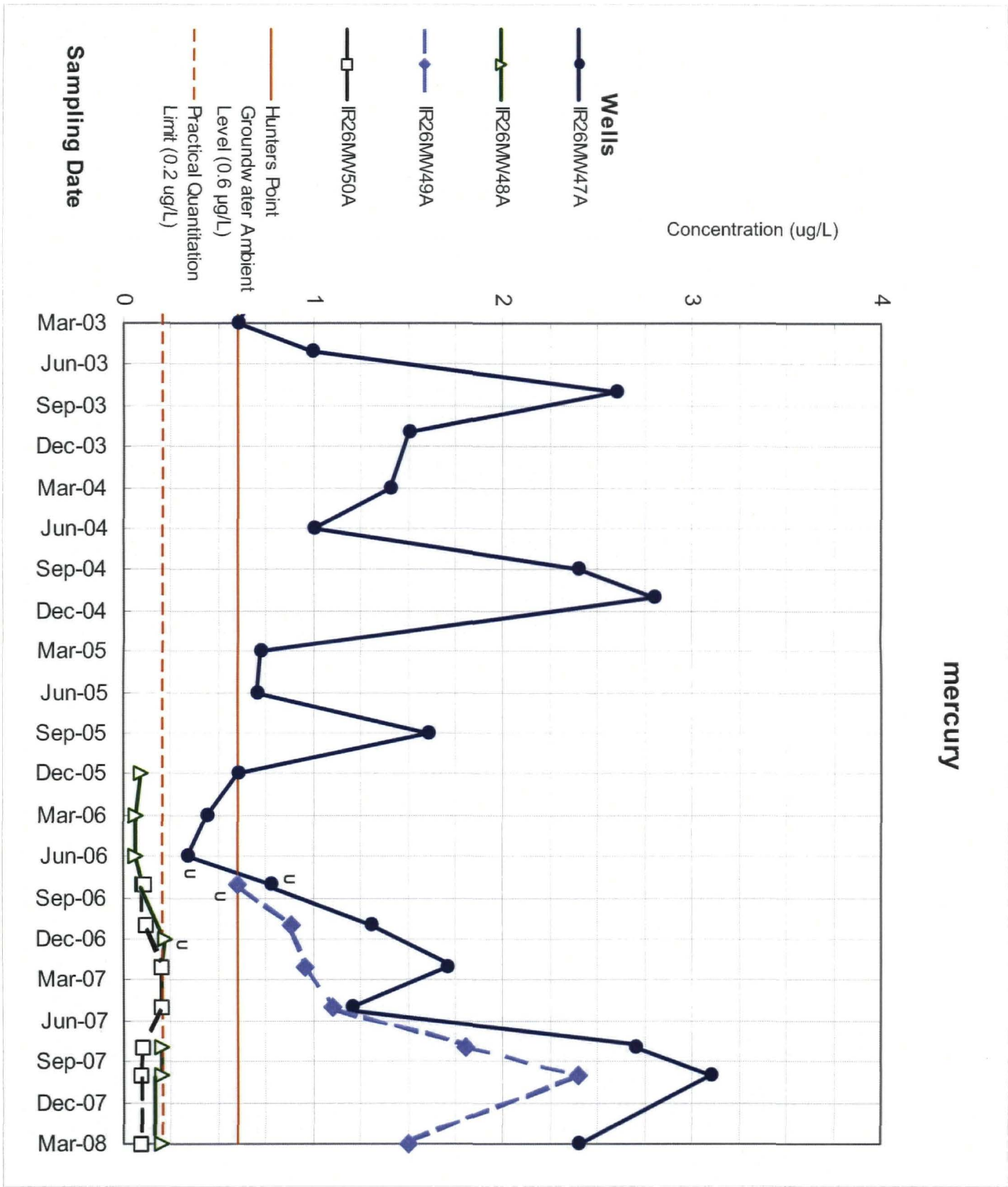
Semi-Annual Groundwater Groundwater Monitoring Report
(October 2007 - March 2008)

July 2008 CEKA-3001-0000-0008

FIGURE

4-4

Note:
Non-detects greater than 0.2 ug/L shown with "U" qualifier.
Wells IR26MMW49A and IR26MMW50A installed July 2006.



7901 Stoneridge Drive, Suite 505, Pleasanton, CA 94588-3677
PH (925) 463-7301 FAX (925) 463-7351



Hunters Point Shipyard, San Francisco, California
U.S. Navy, Southwest Division, NAVFAC, San Diego, California

Drawn by: N. Cook 6/9/2008 Project: C5006

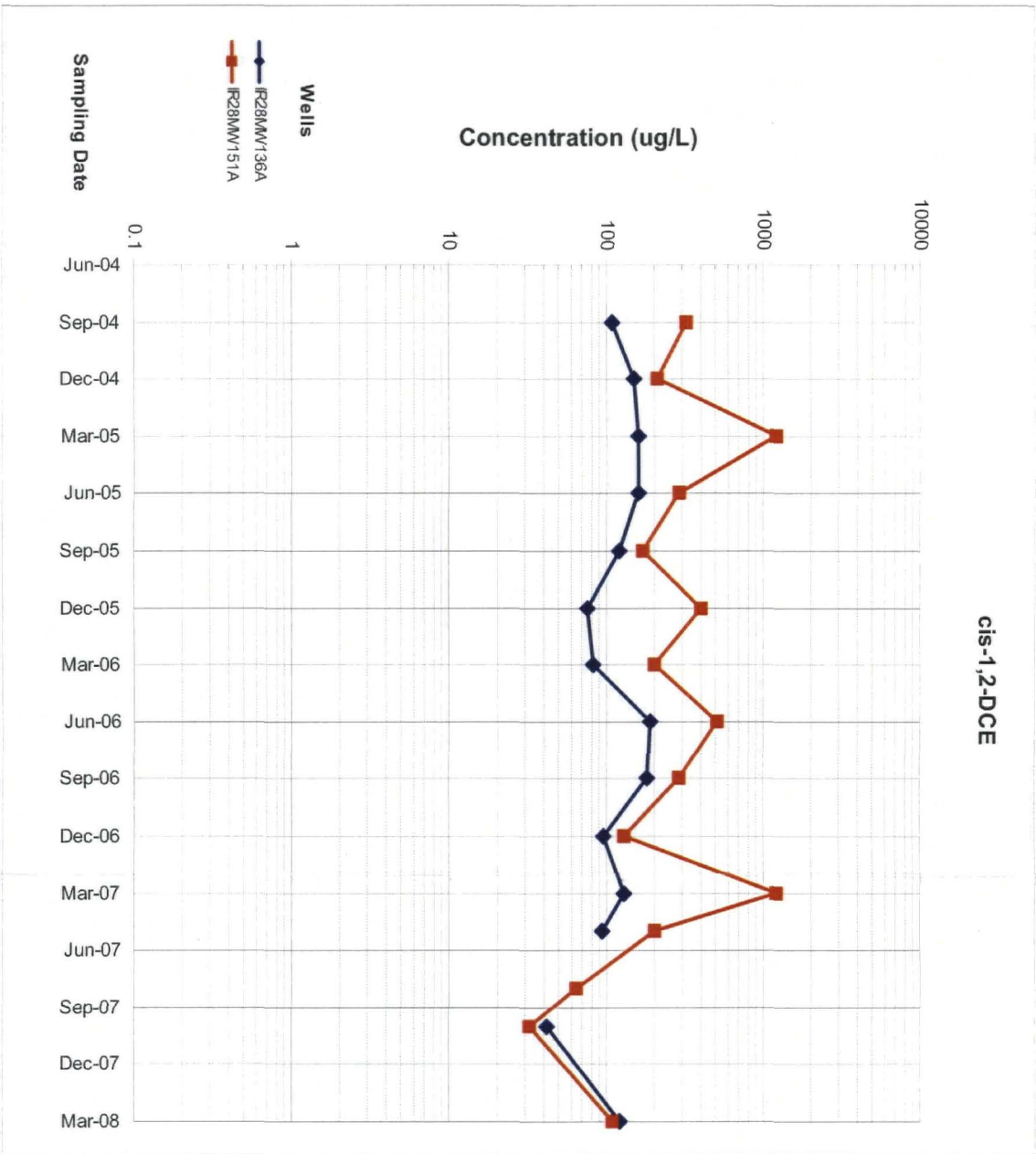
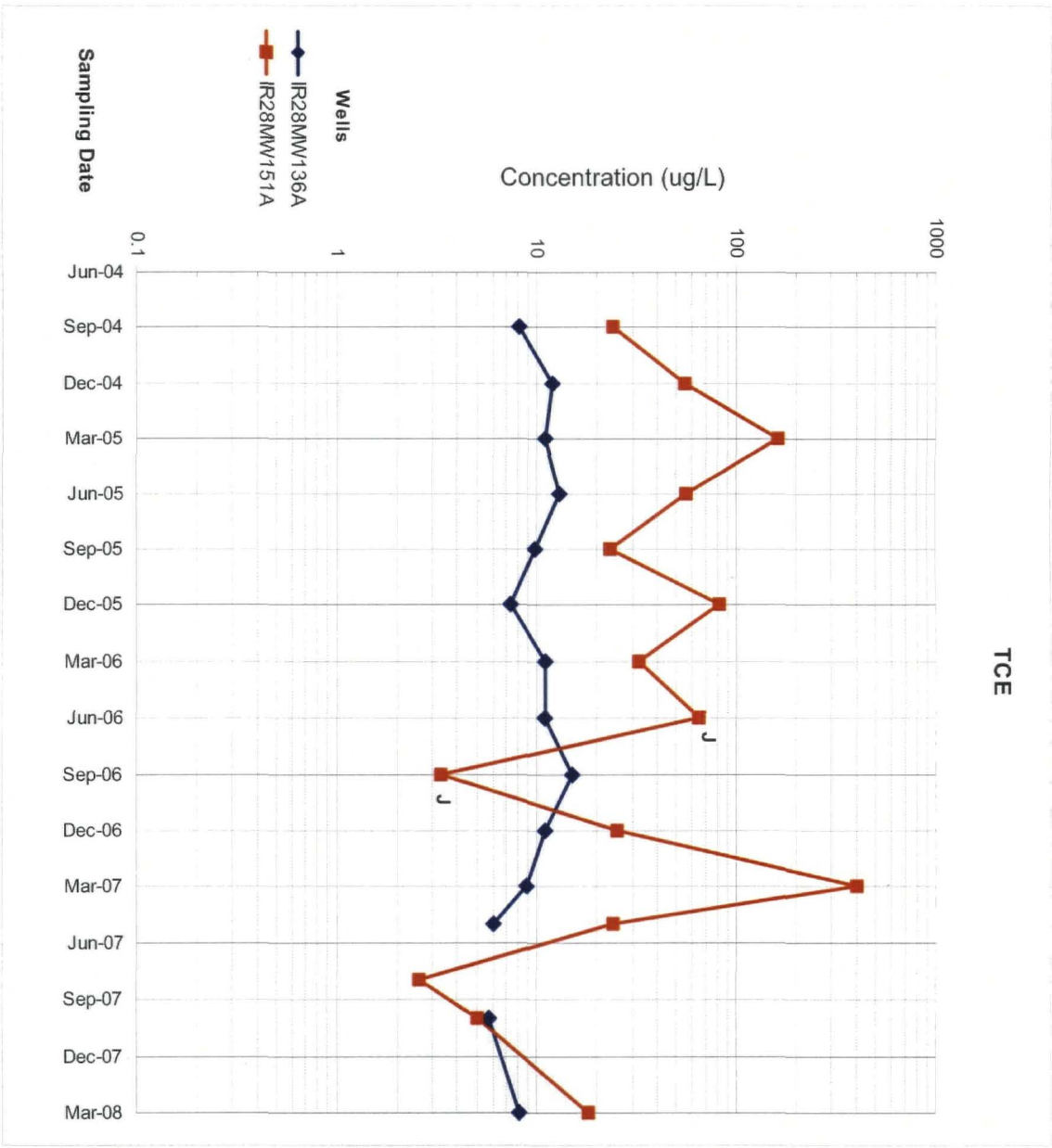
Time-series plot of mercury concentrations
in groundwater at selected Parcel B wells

Semi-Annual Groundwater Monitoring Report
(October 2007 - March 2008)

July 2008 CEKA-3001-0000-0008

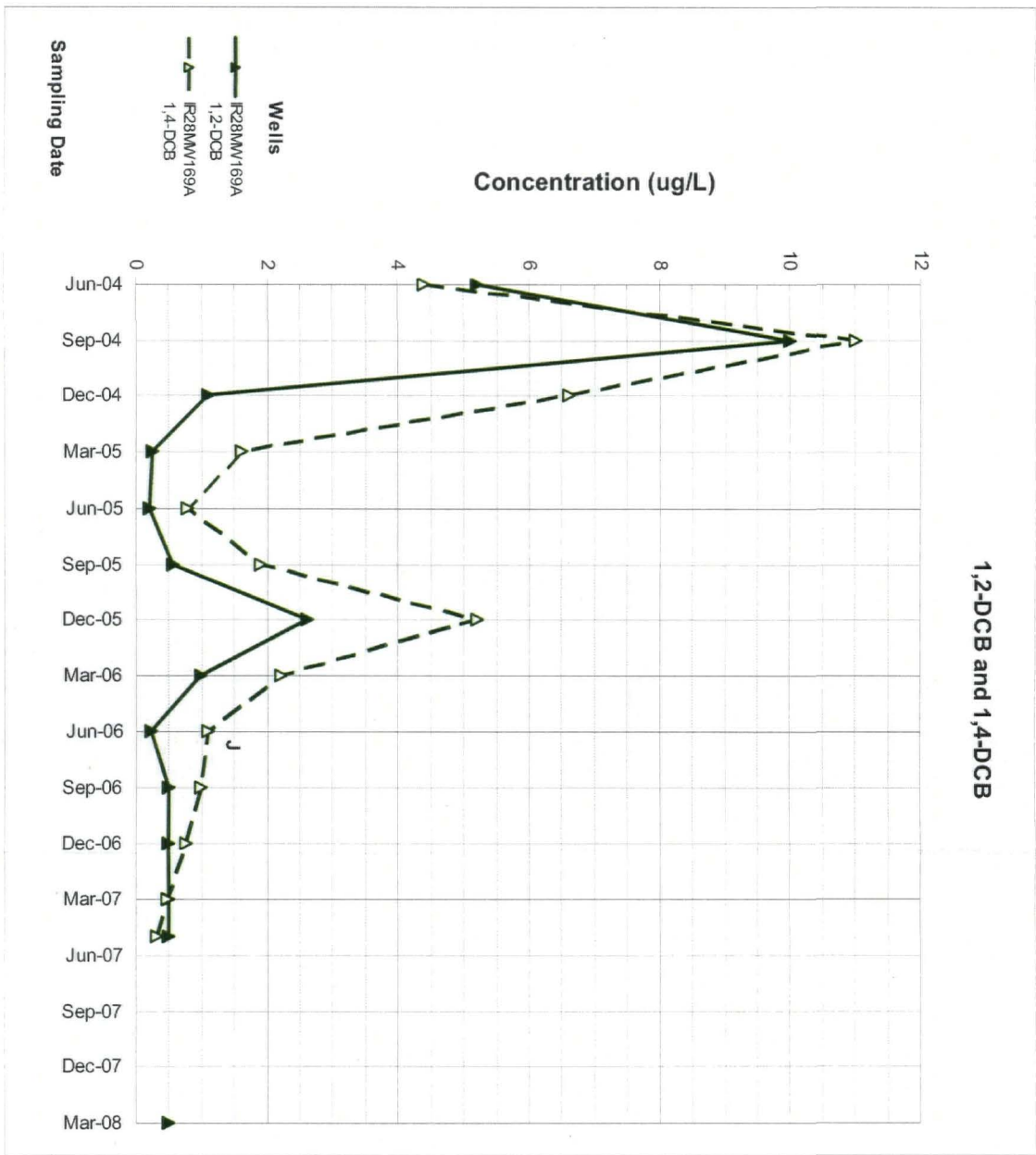
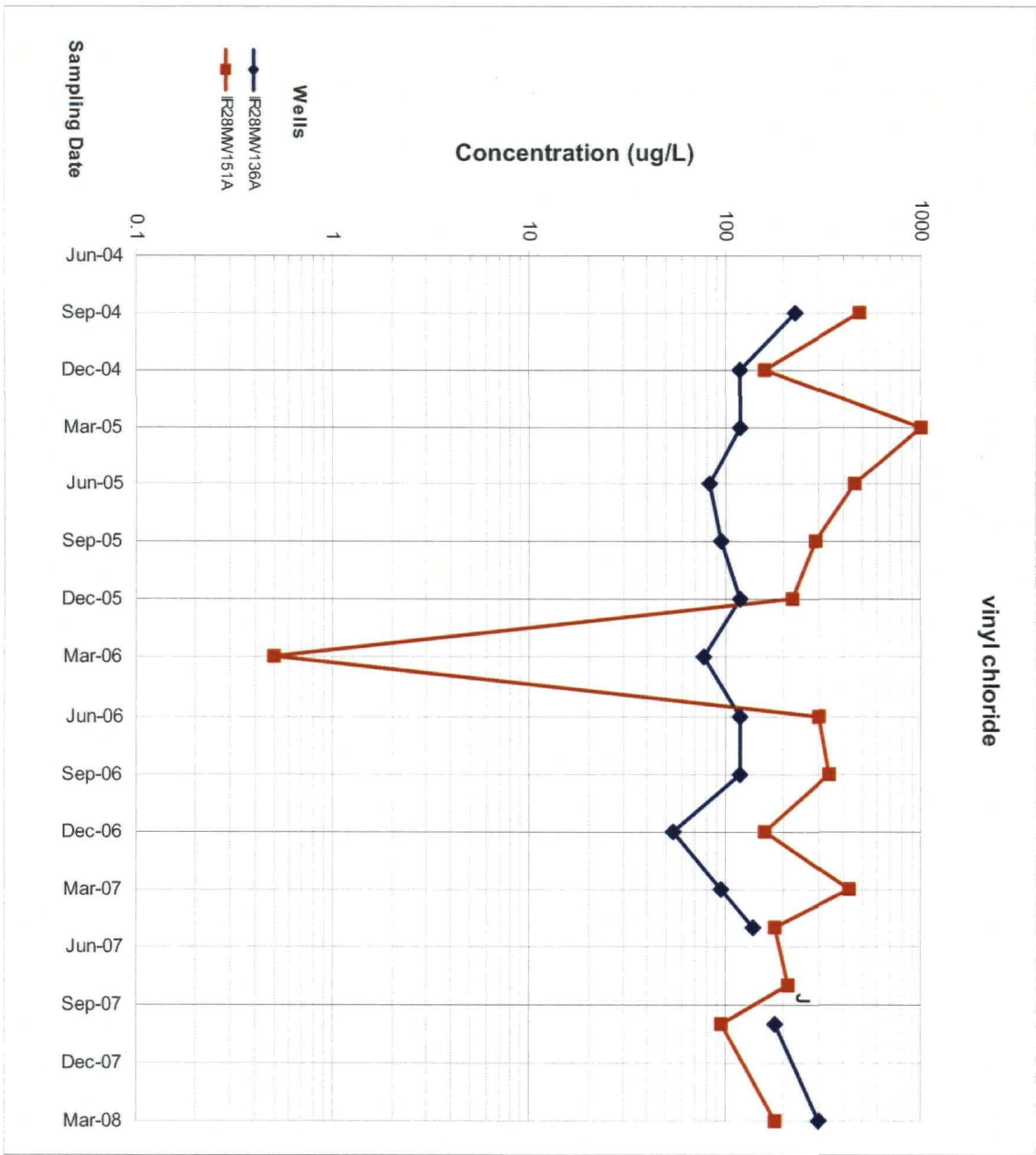
FIGURE

4-5

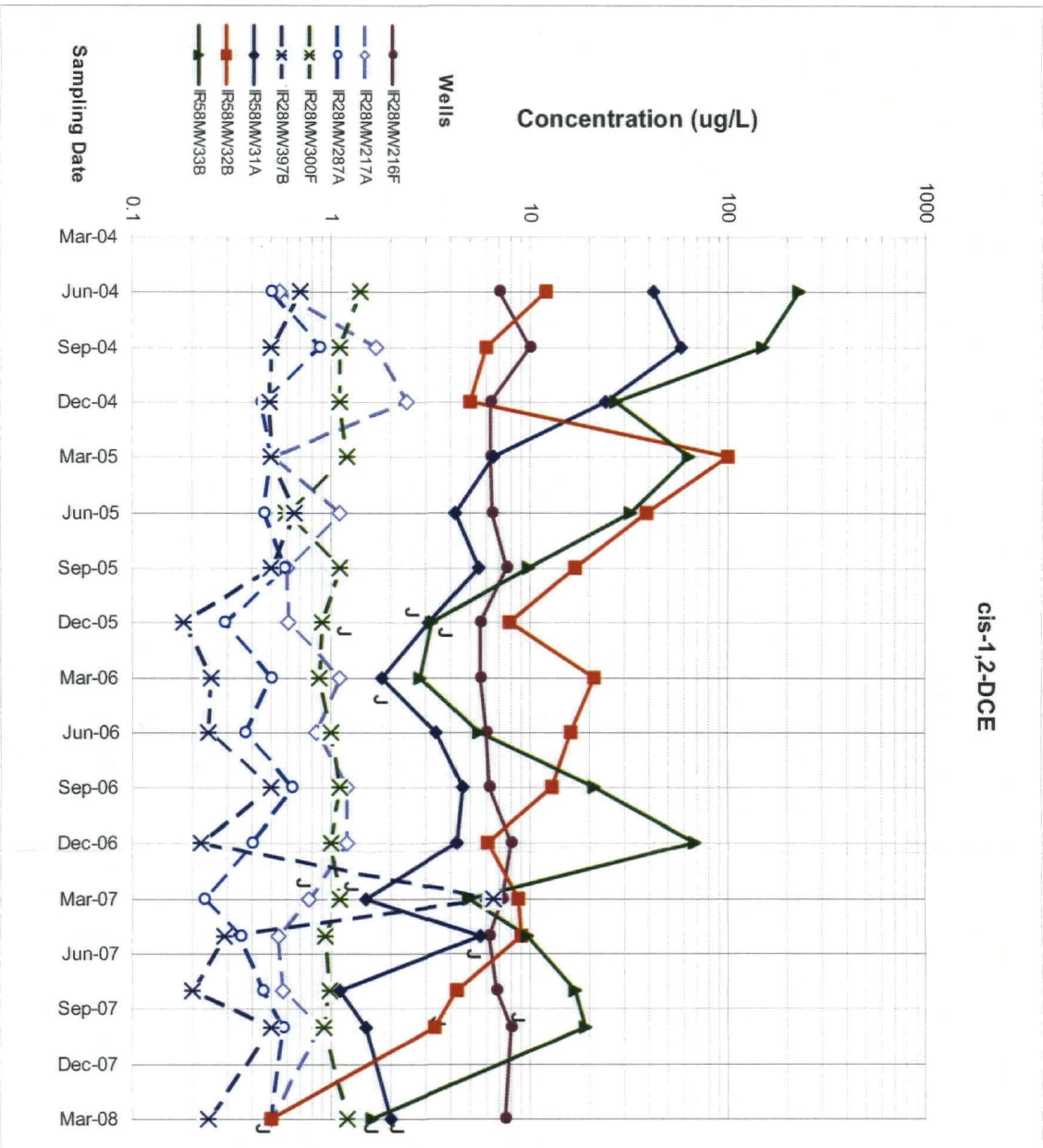
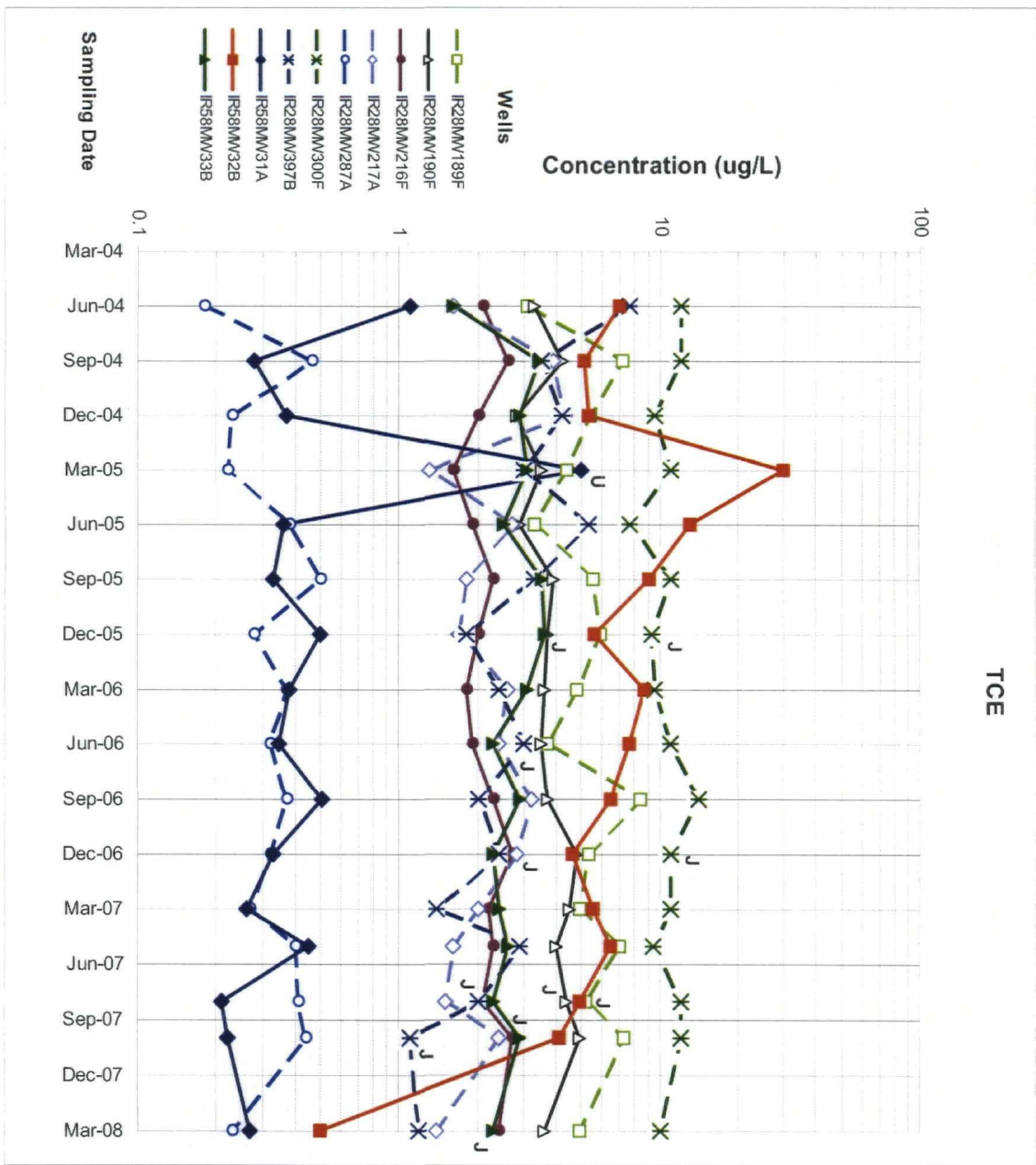


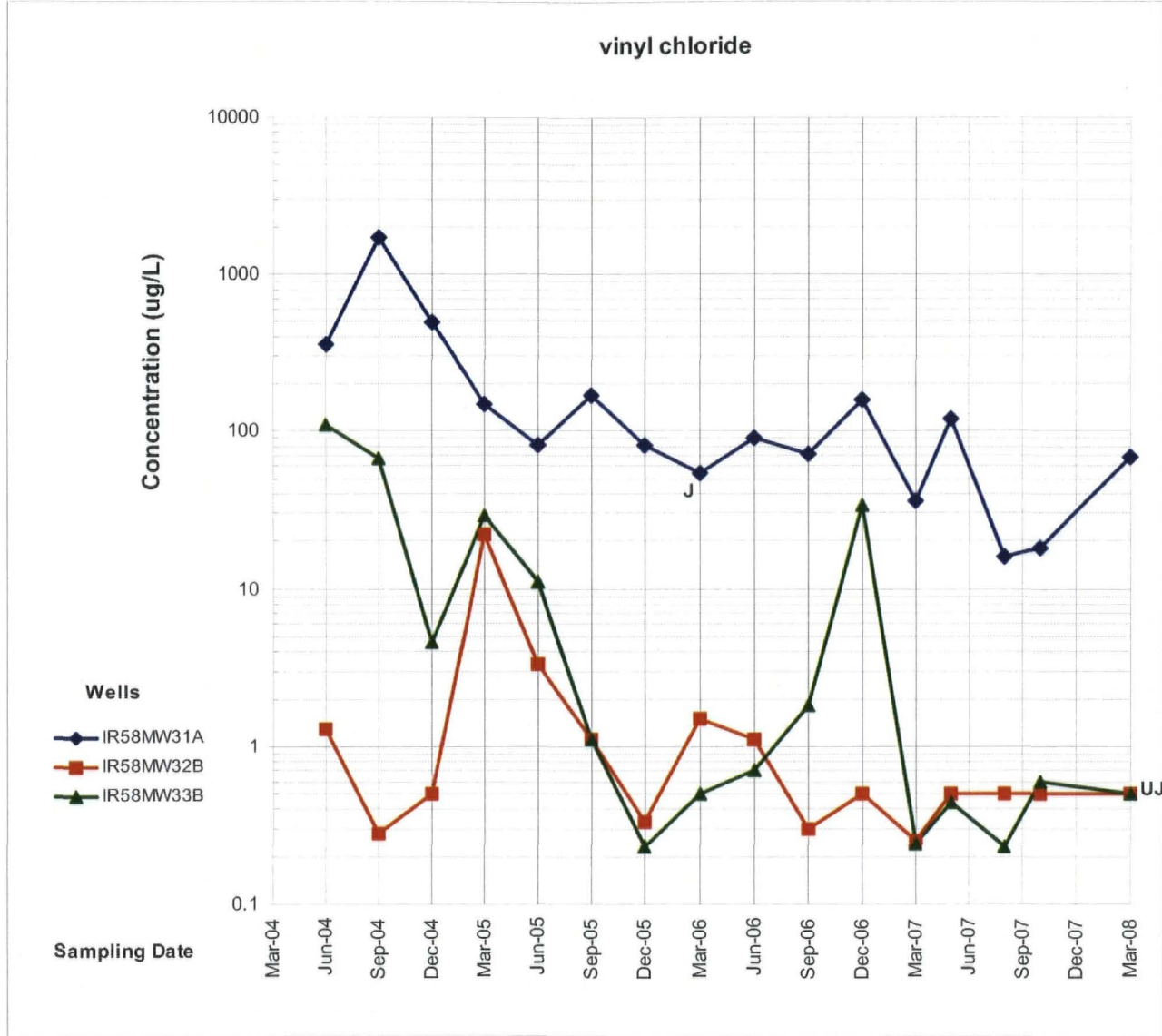
Note: Practical quantitation limit 0.5 ug/L.
Estimated values greater than 0.5 ug/L shown with "J" qualifier.
IR28MW136A not sampled 3Q07

Note: Practical quantitation limit 0.5 ug/L.
Estimated values above 0.5 ug/L shown with "J" qualifier.
IR28MW136A not sampled 3Q07.

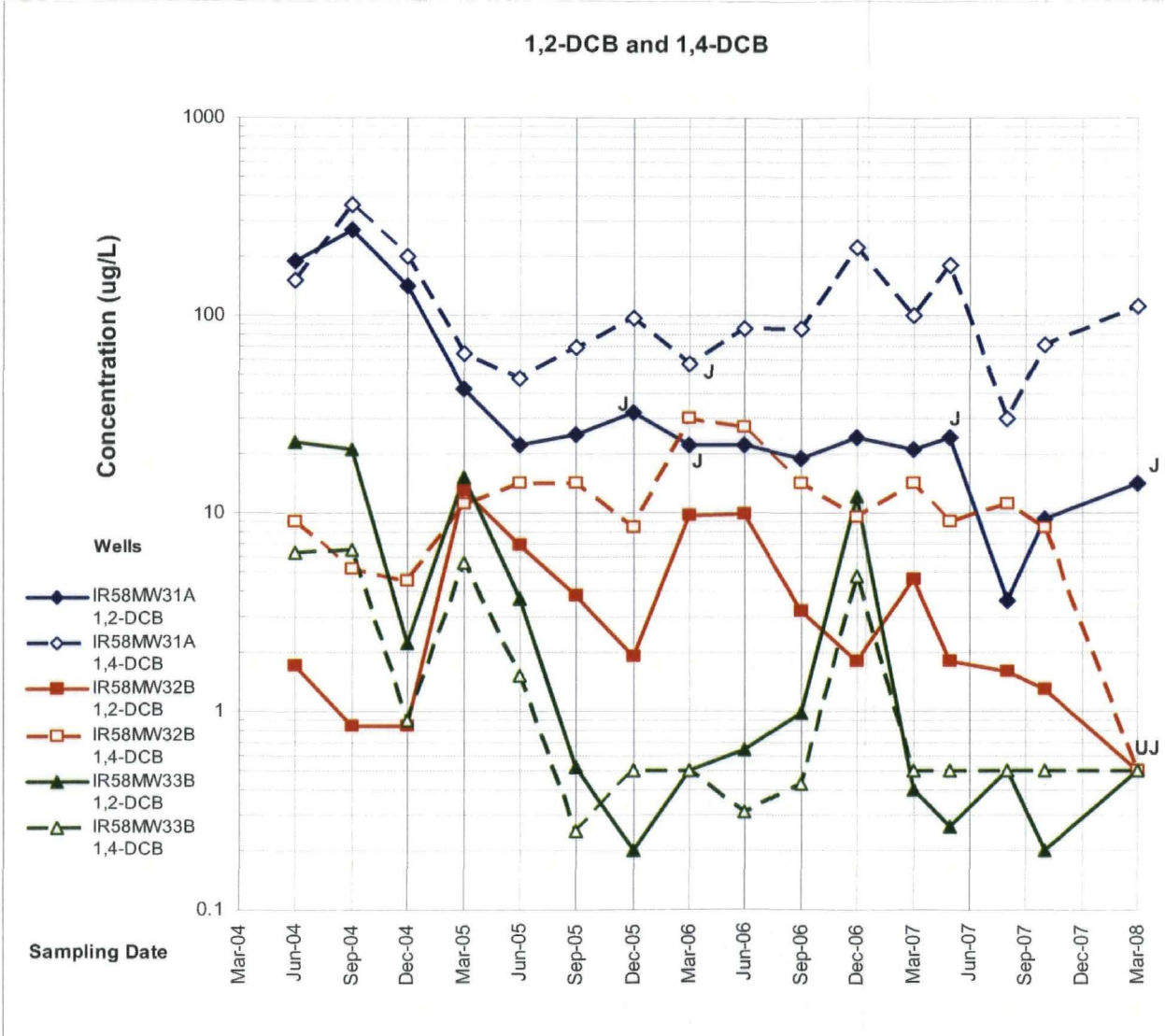


Note: Practical quantitation limit 0.5 ug/L.
Non-detects greater than 0.5 ug/L shown with "U" qualifier.
Estimated values greater than 0.5 ug/L shown with "J" qualifier.





Note: Practical quantitation limit 0.5 ug/L.
 Non-detects greater than 0.5 ug/L shown with "U" qualifier.
 Estimated values greater than 0.5 ug/L shown with "J" qualifier.



CE²KLEINFELDER
 7901 Stoneridge Drive, Suite 505, Pleasanton, CA 94588-3677
 PH (925) 463-7301 FAX (925) 463-7351

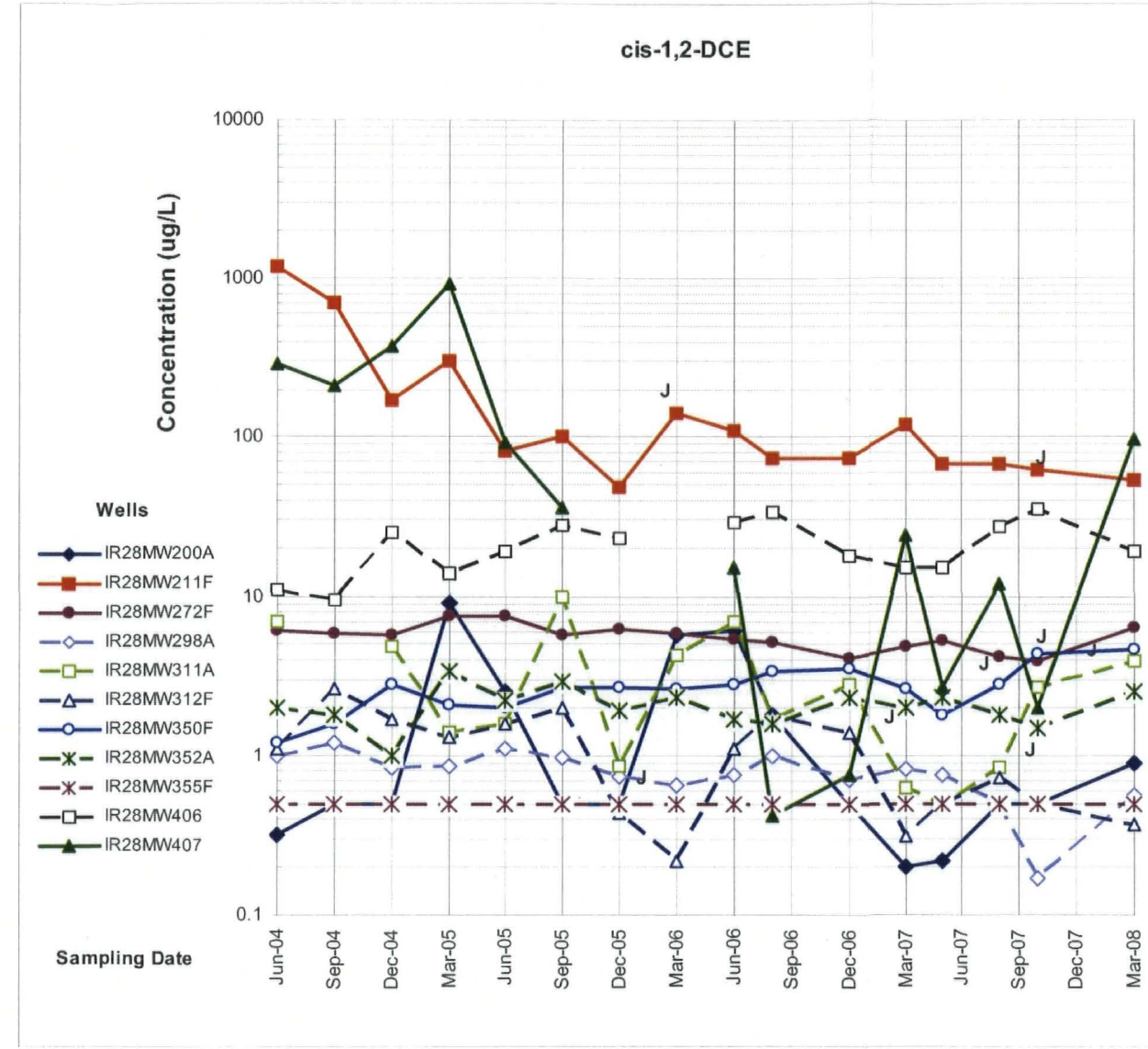
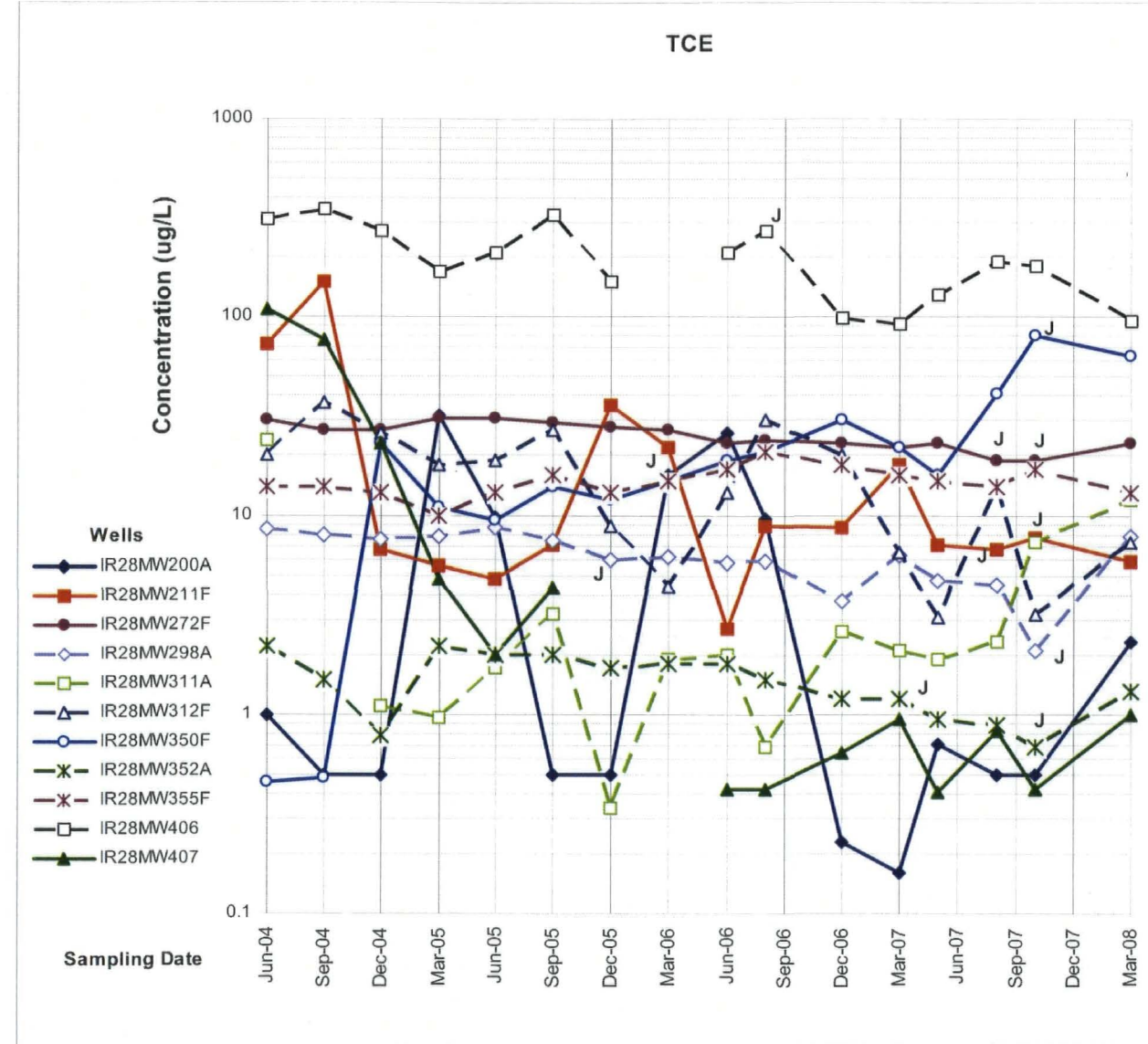
NAVFAC
 Hunters Point Shipyard, San Francisco, California
 U.S. Navy, Southwest Division, NAVFAC, San Diego, California
 Drawn by: N. Cook 6/11/2008 Project: 5006

Time-series plots of vinyl chloride, 1,2-DCB and 1,4-DCB in groundwater at RU-C2

Semi-Annual Groundwater Monitoring Report
 (October 2007 - March 2008)
 July 2008 CEKA-3001-00000-0008

FIGURE

4-9



Note: Practical quantitation limit 0.5 ug/L.
 Estimated values above 0.5 ug/L shown with "J" qualifier.
 IR28MW406A not sampled in 1Q06.
 IR28MW407A not sampled in 4Q05 or 1Q06.

CE² KLEINFELDER
 7901 Stoneridge Drive, Suite 505, Pleasanton, CA 94588-3677
 PH. (925) 463-7301 FAX. (925) 463-7351

NAVFAC
 Hunters Point Shipyard, San Francisco, California
 U.S. Navy, Southwest Division, NAVFAC, San Diego, California
 Drawn by: N. Cook 6/11/2008 Project:506

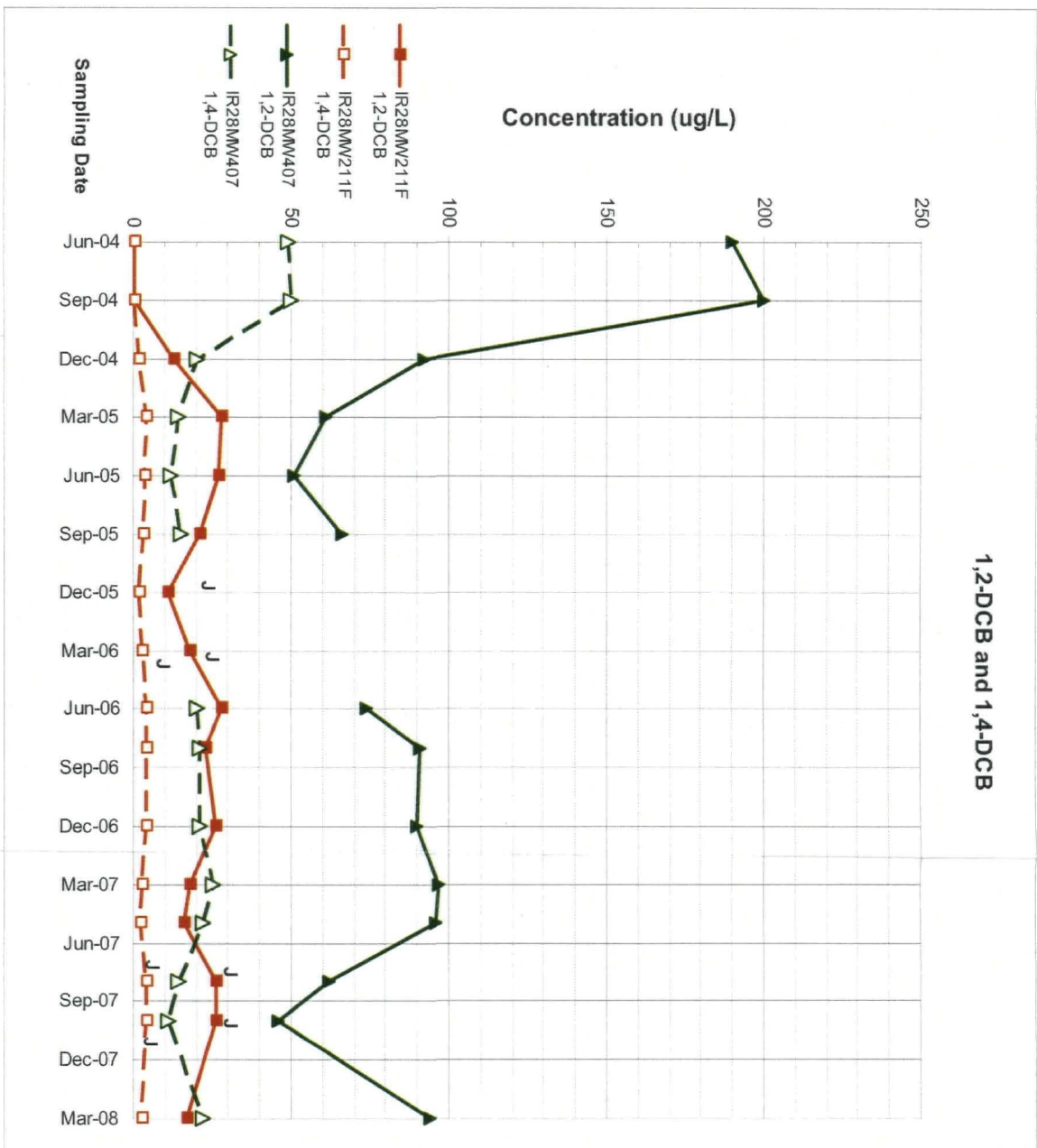
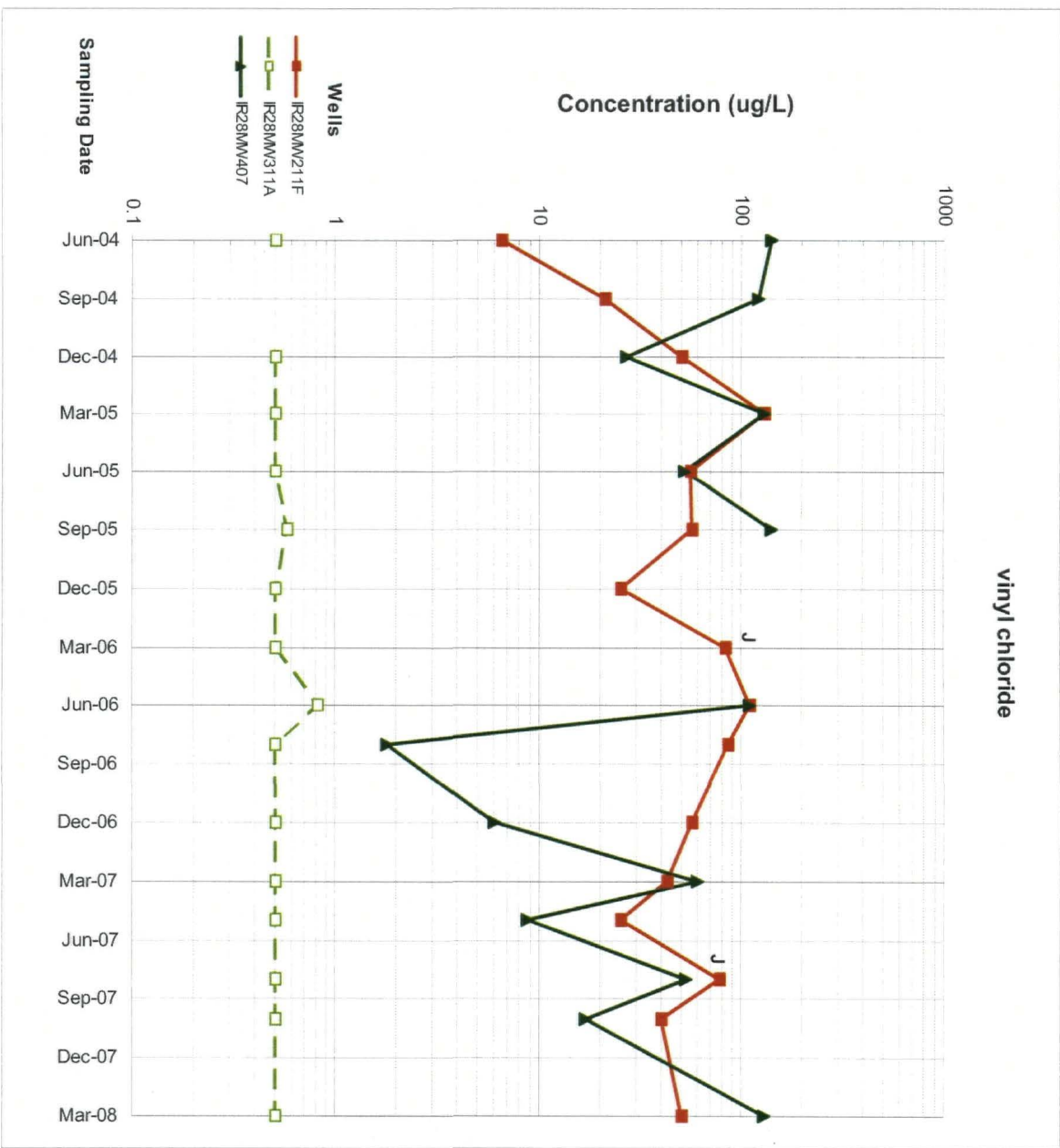
Time-series plots of TCE and cis-1,2-DCE in
 groundwater at RU-C4

Semi-Annual Groundwater Monitoring Report
 (October 2007 - March 2008)

July 2008 CEKA-3001-0000-0008

FIGURE

4-10



Note: Practical quantitation limit 0.5 ug/L.
Estimated values above 0.5 ug/L shown with "J" qualifier.
R28MM407 not sampled in 4Q05 or 1Q06.

Time-series plots of vinyl chloride, 1,2-DCB and 1,4-DCB in groundwater at RU-C4

FIGURE

4-11

Semi-Annual Groundwater Monitoring Report
(October 2007 - March 2008)

May 2008 CEKA-3001-0000-0008

CE² KLEINFELDER

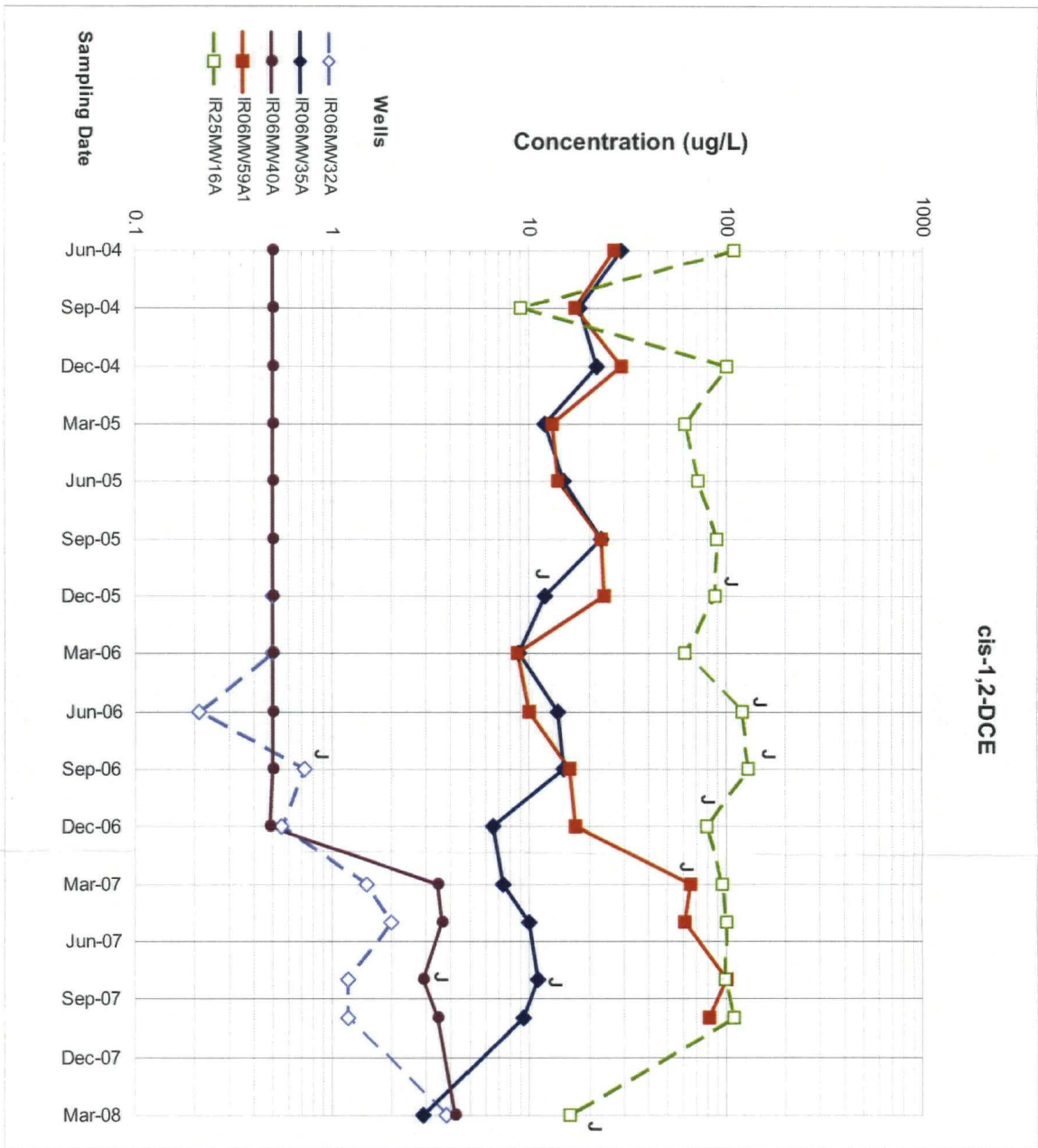
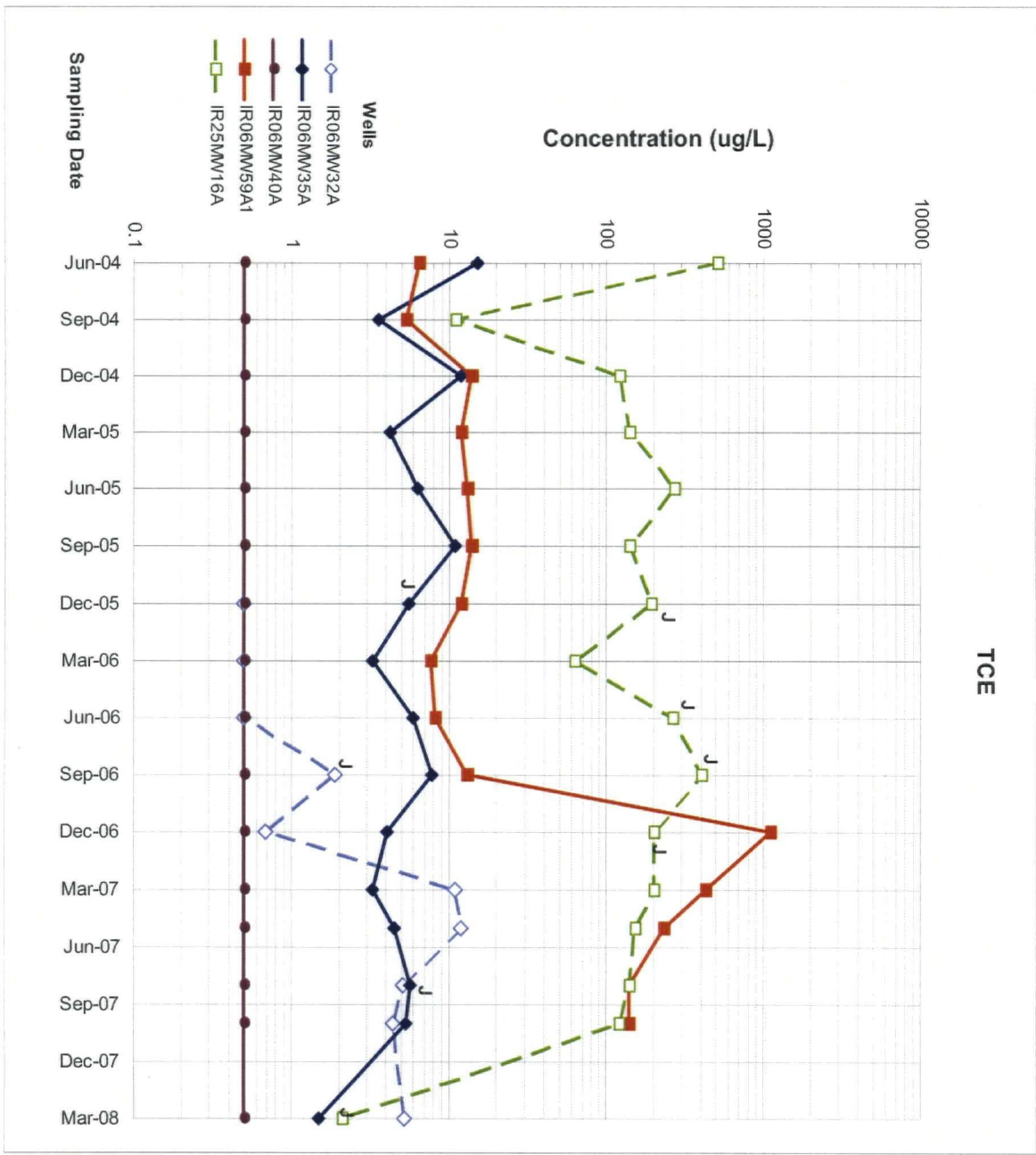
7901 Stoneridge Drive, Suite 505, Pleasanton, CA 94588-3677
PH. (925) 463-7301 FAX. (925) 463-7351

NAVFAC

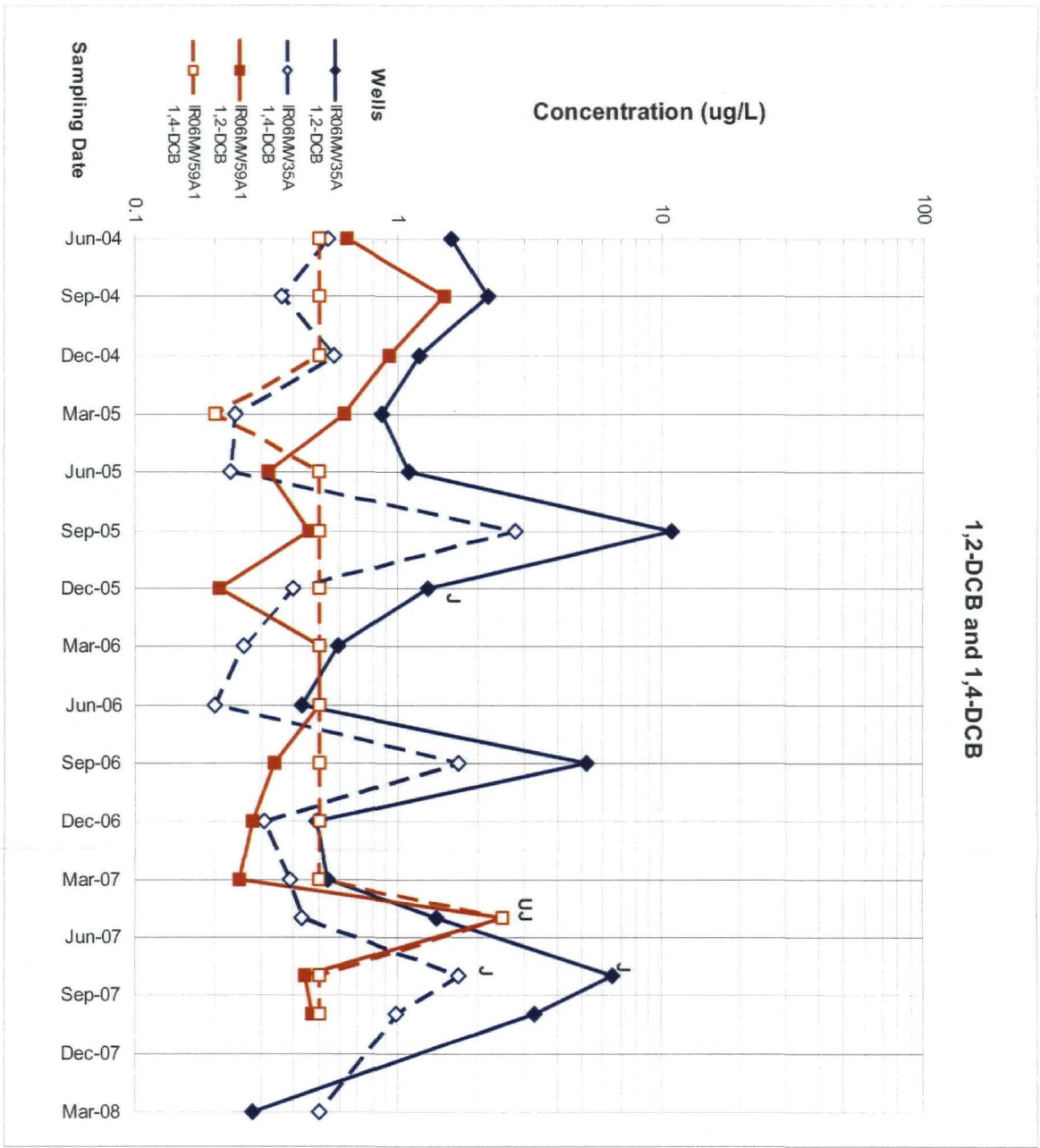
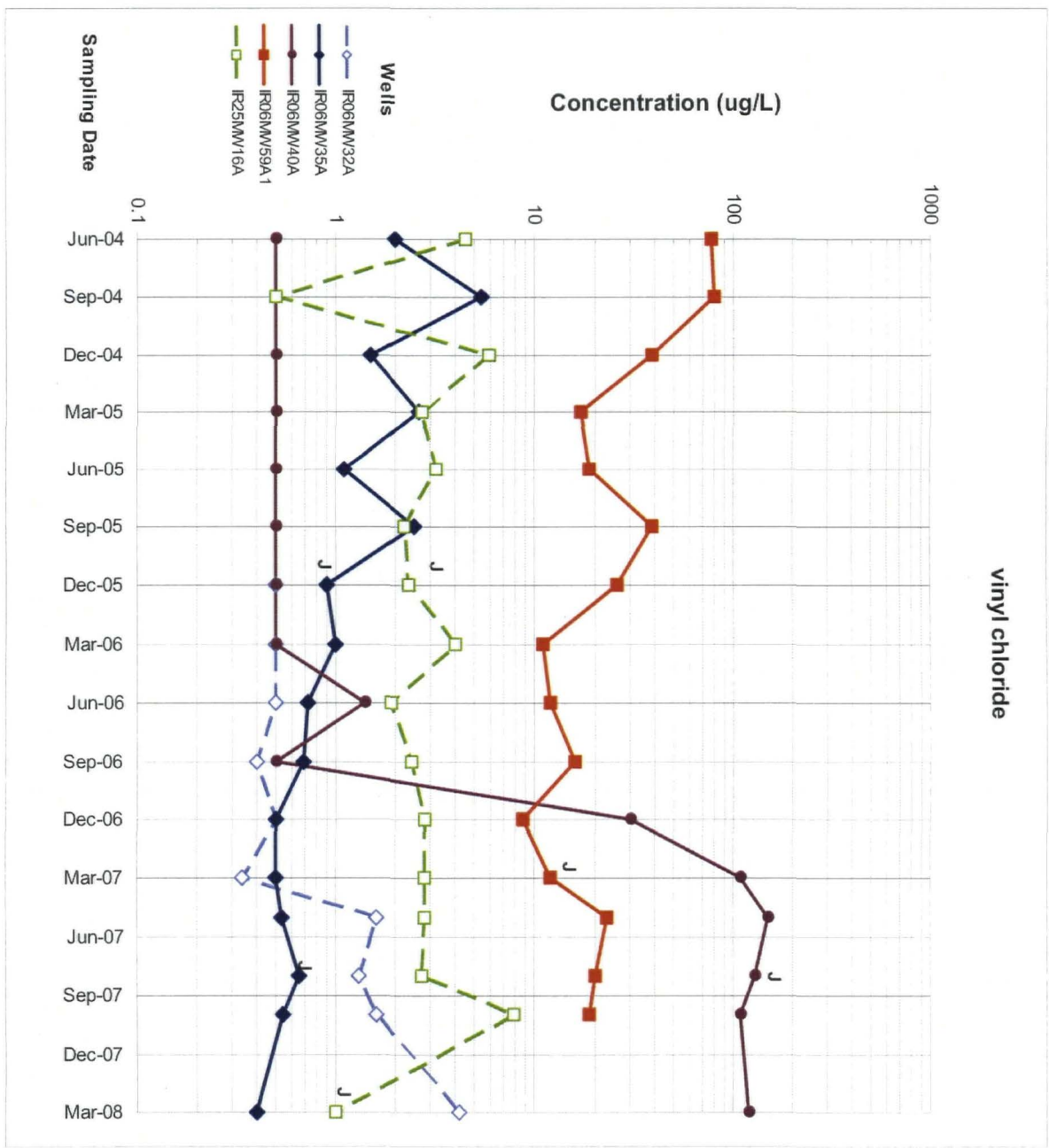
Hunters Point Shipyard, San Francisco, California
U.S. Navy, Southwest Division, NAVFAC, San Diego, California

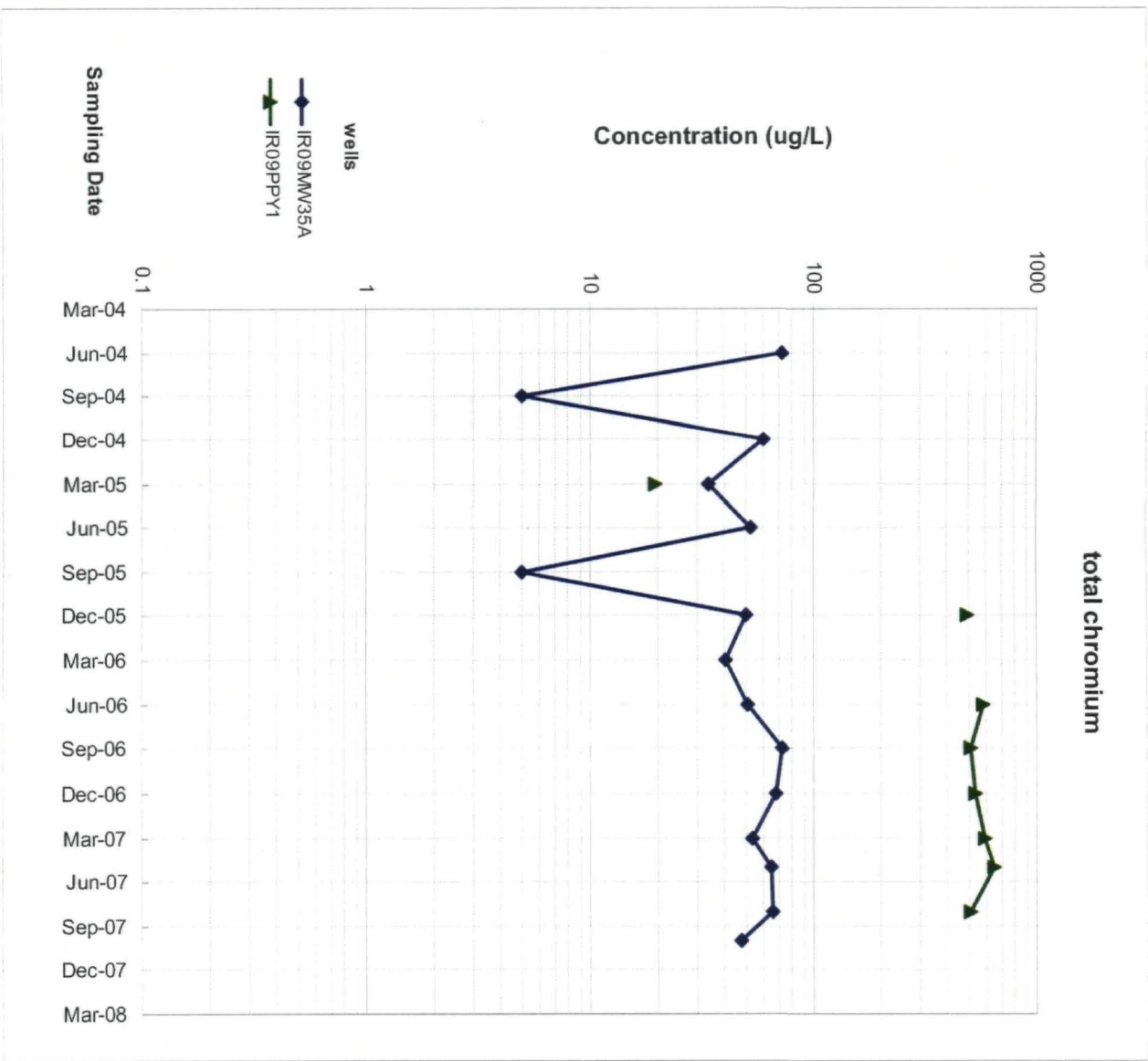
Drawn by: N. Cook 6/11/2008 Project: 5006

Note:
Practical quantitation limit 0.5 ug/L.
Estimated values above 0.5 ug/L shown with "J" qualifier.
IR06MW59A1 not sampled 1Q08.

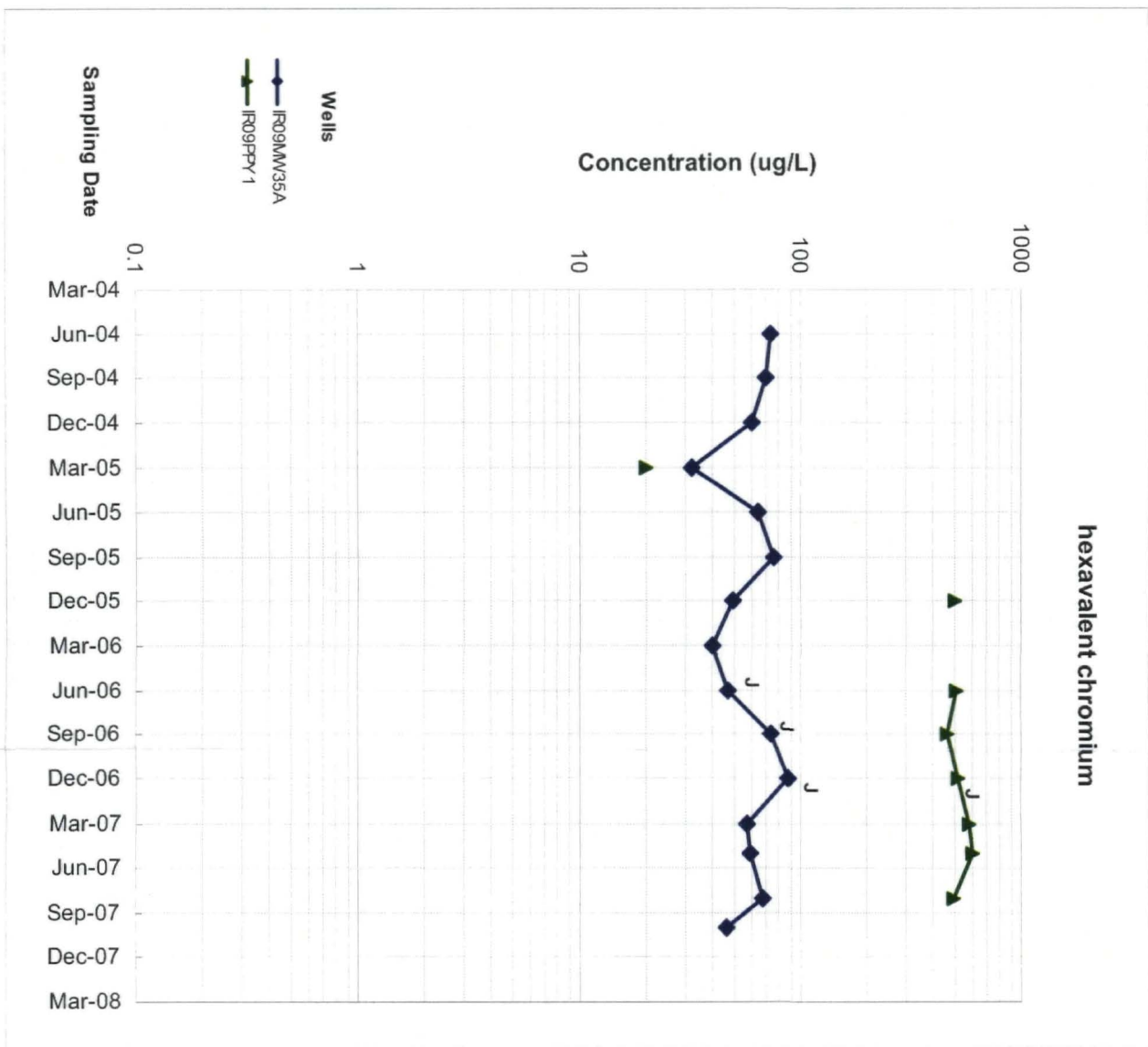


Note:
Practical quantitation limit 0.5 ug/L.
Non-detects above 0.5 ug/L shown with "U" qualifier.
Estimated values above 0.5 ug/L shown with "J" qualifier.
IR06MW59A1 not sampled 1Q08.





Note:
Practical quantitation limit 5 ug/L.
IR09MMW35A not sampled 1Q08
IR09PPY1 not sampled in 2Q04, 3Q04, 4Q04, 2Q05, 3Q05, 1Q06, 1Q08.



Note:
Practical quantitation limit 0.5 ug/L.
IR09MMW35A not sampled 1Q08
IR09PPY1 not sampled in 2Q04, 3Q04, 4Q04, 2Q05, 3Q05, 1Q06, 1Q08.

Time-series plots of total chromium and hexavalent chromium in groundwater at IR-09

FIGURE

4-14

CE² KLEINFELDER
7901 Stoneridge Drive, Suite 505, Pleasanton, CA 94588-3677
PH. (925) 463-7301 FAX. (925) 463-7351

NAVFAC
Hunters Point Shipyard, San Francisco, California
U.S. Navy, Southwest Division, NAVFAC, San Diego, California

Semi-Annual Groundwater Monitoring Report
(October 2007 - March 2008)

July 2008 CEKA-3001-0000-0008

Plates

This page left blank intentionally

**PARTIALLY SCANNED
OVERSIZE ITEM(S)**

See document # 2226598
for partially scanned image(s).

For complete hardcopy version of the oversize document
contact the Region IX Superfund Records Center



CE2 - Kleinfelder Joint Venture
 4457 Willow Road, Suite 210
 Pleasanton, CA 94588
 (925) 463-7301
 Contract No. N62473-07-C-3001